The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

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NOTICES *—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.*

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Librarians at Oxford

THE meetings of the Association of Special Libraries and Information Bureaux, held at Balliol College, Oxford, during last week-end, marked a distinct advance in some respects on the proceedings of last year. The attendance was larger and more representative; the immediate problem of finance has been settled by a grant of £750 per annum for two years from the Carnegie Fund; a crowded and interesting programme was got through with scarcely an omission. The general organisation, however, still remains in a rather indeterminate shape, and the future will depend largely on the committee's success in drafting a constitution that will offer sufficient scope and stability to the Association without cutting too much into ground covered by existing organisations. There is, first of all, the question of the Associations' relation to the Library Association. It ought not to be excluded from the general movement, and yet its aims are of too obstructive a character to be merged and lost in it. Even when the question of the constitution has been satisfactorily settled, there is the problem of financial contributions to the inevitable and substantial expense. The conference was wise in not trying to force the pace on these and similar points. There was, as far as we could judge, a very fair and accommodating spirit on all sides. By degrees, it may be, the Association will find a place of its own, as the corresponding body in the United States has done, without very much conflict with the existing bodies.

Out of the numerous points discussed at the conferences two may be selected for notice. The first is the enormous extent of the field covered by periodical publications. It was a surprise, even to the experts, to hear that over 24,000 periodicals publishing the results of scientific research were in active existence between 1900 and 1920. The number is certainly not declining. How these are to be indexed, where they are to be stored so as to be most generally accessible, who is to be responsible for their indexing and storage, are some of the questions which it is easy to ask but difficult to answer. The discussions at times pointed to the fatalistic conclusion that the modern printing press turns out more matter than the human mind can keep pace with. The second point is the suggestion that the Association may aim at becoming a general clearing house rather than an actual depository of knowledge—not supplying information itself so much as directing the inquiry along right lines and putting the inquirer in touch with the right people. Attention was drawn to the fact that so many people when faced with difficulties in obtaining information on some specific problem, instinctively turn to the newspaper office as a last resource. The inquiries received—as we ourselves have found from experience—are of the most varied, and frequently of the most unexpected, character, and indicate the remarkable degree to which even well-organised concerns are lacking in precise knowledge as to sources of information concerning even their own particular business.

Here, as one paper pointed out, the Association aims at doing on a national scale what many a technical journal already does in its own field. How far can it count on the co-operation of the special libraries of every kind in meeting the needs of inquirers? No limit, of course, can be fixed in advance. Public libraries will help as a matter of ordinary duty; special research and works libraries will be disposed to assist, provided the demand on their time is not excessive. Tact, common sense, and courtesy must decide. It only remains to add that chemistry and chemical interests were well represented at the conference. There were numerous chemical delegates present and three of the papers had a definite chemical interest—Mr. F. E. Hamer's on the Press, Mr. T. F. Burton's on Indexing, and Mr. Harold E. Potts's on Patents and Special Libraries.

Oil Enrichment in Situ

THE investigations which are described in Technical Paper No. 14, just issued by the Fuel Research Board, show promise of having an important bearing on the development of coal carbonisation and the utilisation of oil for the enrichment of gas. In the realms of carbonisation, the present is the day of the vertical retort which, owing to its efficiency and flexibility, seems to be carrying all before it. The primary object in view nowadays is the recovery from coal, when distilled, of the maximum number of therms per ton, and those who have followed the work of the Fuel Research Board will call to mind that, when the process of steaming the coal charge is practised, the maximum yield of therms can only be obtained at the expense of the calorific power of the gas. In consequence, the quantity of steam admitted has usually to be restricted to about 20 per cent. of the weight of the coal. It was, however, suggested to the Board that the quality of the gas might possibly be maintained by the injection into the coal charge of oil of the customary variety as used for the carburation of water gas. In other words, if blue water gas can be successfully generated *in situ*, there would appear to be no reason why carburetted water gas, or at least an oil gas consisting of the vapours of cracked petroleum, should not be similarly produced.

The Fuel Research Board adopted the method of introducing a tube down the retort, lying as nearly as possible along its axis, to such a depth that the oil issuing from it would be subjected at once to what might prove to be the most effective temperature. To prevent the oil from being prematurely cracked, it was thought desirable to water-jacket the tube, though this was found to involve the loss of a sensible amount of heat, and attempts are now being made to do without the water jacket so as to improve the commercial efficiency of the process. Even as the process stands, however, it has some remarkable results to its credit, for an increase of gas output to the extent of 16·5 per cent. was obtained by augmenting the steam consumption by about 20 per cent., and injecting oil to the extent of just over seven gallons per ton of coal carbonised. Similarly, by increasing the steam consumption to about 12 per cent., and injecting oil to just under five gallons per ton of coal, an increase of about 11 per cent. was obtained. As would be expected, there is a limit to the quantity of oil which can be injected per unit weight of coal carbonised, this limit lying in the neighbourhood of ten gallons per ton of coal.

The advantages of the process may perhaps be more fully appreciated if it is explained that under present conditions, with about 20 per cent. of steaming, it is possible to obtain 85 therms in the form of gas from a ton of good coal. By increasing the rate of steaming (which oil-injection renders practicable), it should be comparatively easy to obtain another 10 therms, while the injection of ten gallons of oil would account for yet another 10 therms, making 105 in all. This means that the yield, as compared with normal vertical retort practice, is increased by nearly 25 per cent., the additional outlay involved being solely that demanded for the oil and excess steam. The process is worthy of note, if only for the fact that it illustrates the great vitality which has always characterised, and still exists in, the gas industry, an industry which has a remarkable capacity for rising to the occasion when threatened by competitive interests.

The Position of German Industry

FOLLOWING the recent investigation by THE CHEMICAL AGE of the liquid fuel situation in Germany, the report by our representative who has just returned from the Cologne Fair appears in this issue. Although the exhibition offered considerable opportunities to the trade, notably to the dyestuff manufacturer, little of importance was shown from the chemist's point of view, apart from a display of scientific instruments; but some interesting facts are disclosed as a result of the visits which were made to several German factories in this connection.

Much attention has lately been attracted to the financial situation in Germany by the liquidation of the Stinnes interests, from which it became clear that credit limitation is the essence of the Reichsbank's present policy, resultant upon a shortage of capital. That this policy is unpopular in business circles was evident from the pronouncements of Dr. Hugo Stinnes during the settlement of his father's estate, and the fact was emphasised in the strongest possible terms by a speech made at the Cologne Fair, in which a leading business man criticised the action of the banks and said that German business would not recover until this limitation was removed. In view of these limited resources, it is certainly reasonable to conclude that the industrial activity at present noticed in many quarters in Germany is based in the main on day-to-day orders, without which it is difficult to see how business could be maintained. At a large iron foundry on the Rhine, for instance, the men are actually employed for ten hours a day, while from a visit to an artificial silk works it is disclosed that not less than £5,000 worth of raw materials are being treated daily by this single concern, and these facts certainly give some indication as to the present position of German industry.

Consequent upon British import taxes Germany has sought markets elsewhere, and is now making certain lines exclusively for export to various parts of our Empire. Whatever may be the economic significance of this trade, it indicates a commercial policy, the importance of which we cannot afford to overlook. The absence of markets is one of the principal causes of trade depression in Britain at present, and our manufacturers are taking advantage of every opportunity to extend overseas business. The Foreign Office has just formulated a trade treaty with Germany with a view to establishing friendly commercial relations in Central Europe. The Cologne Fair certainly suggests itself as one possible channel through which such measures could be put into practice, and British interests might with advantage be represented at the session next spring, which will be the first exhibition of a professedly international character to be held in the Rhineland since the war.

Copper in Chemical Lead

THE cost of erection of new plant and the maintenance of that already existing is nowadays such a substantial item that the chemical engineer can afford to take little in the way of risks in selecting his materials of construction. Where chemical processes are concerned probably one of the most common materials employed is lead, and as to the ideal characteristics which chemical lead should display, there still seems to be exhibited a good deal of variation of opinion. For the most part extreme purity is called for, but there are those who continue to place their faith in the inclusion of a small proportion of copper. Whether material advantages ensue from the presence of copper is difficult to say with any certainty, but there is no question that it does undoubtedly reduce the tendency towards internal fatigue. On the other hand, it has been contended that no really convincing evidence has yet been put forward in support of the view that the two metals can be alloyed even when the proportion of copper is small, and for this reason many authorities regard the mixture with suspicion.

Even if it is admitted that solid solution of the two metals can be effected, then the amount of copper thus combined must be infinitesimally small, for any excess will be mechanically held, with a tendency to form segregations. Mr. F. Hirsch, of the United Alkali Company, whose volume in the *Chemical Engineering Library* will shortly be published, deals in detail with this point, and adds that, in his own experience, destructive galvanic action has been found to take place in sulphuric acid chambers in those patches where the segregations occur. It must be considered, therefore, that the deliberate addition of copper is a very hazardous practice.

While speaking of this all-important subject, the opportunity may be taken to point out that lead failure in chamber plants is frequently due to the improper control of water vapour supply, a deficiency of which favours the production of nitro sulphonic acid, resulting in the deposition of chamber crystals on the lead walls. On the other hand, an excessive supply assists in the production of nitric acid, due, no doubt, to the decomposition of peroxide. The point to bear in mind is that while nitric acid (present in sulphuric acid of certain concentrations) may have but a marked effect upon the lead, a slight deviation in strength may quite readily occasion rapid breakdown.

The British Industries Fair

THERE are points of unusual interest in the preliminary announcements by the authorities of the British Industries Fair. The fair, it appears, will be unique in that it will embody three noteworthy departures from the policy which has prevailed in the past. Sir Charles Higham, the publicity expert, has been called in by the Government to assist in the administration of the Treasury grant of £20,000. That move in itself is definite progress, for the importance of publicity and of attracting the buyer cannot be over-estimated. All countries of the world are covered in a comprehensive scheme of general advertising, and the value of the trade Press has, of course, been fully appreciated by such an efficient administrator as Sir Charles. Even more noteworthy are the two decisions affecting the actual exhibitors. The Fair is to be open to the general public each day during the evening, and firms desirous of selling direct to them will not be prevented as the original restriction clause has been deleted this year. The policy of allowing direct sales is a matter of much controversy, although it hardly affects the chemical industry so acutely as it does those trades which depend wholly upon retail articles. The Board of Trade officials are fully cognisant of the position, and if opposition necessitates it, those firms who wish to sell direct will be accommodated separately. With that legitimate objection provided for, it is probable that the admission of the public will be a progressive step. Still, at present, the important fact is that applications are more than encouraging, and with the advantage of scientific publicity, backed by loyal support of the manufacturers, this Fair should set a new standard in the way of results.

Points from Our News Pages

The Calendar

Oct.		
4	Société de Chimie Industrielle: Fifth Annual Congress.	Paris.
5	Institution of the Rubber Industry (London and District Section): "Collective Advertising." Sir Charles Higham. 8 p.m.	Engineers' Club, Coventry Street, London.
6	Institution of Petroleum Technologists: Conversazione 8 to 10 p.m.	Aldine House, Bedford Street, Strand, London.
6	Institute of Metals (Birmingham Section): "Some Phases of Life in India." Dr. F. Johnson. 7 p.m.	Chamber of Commerce, New Street, Birmingham.
6	Institute of Metals (N.E. Coast Section): Chairman's Address, H. J. Young. 7.30 p.m.	Armstrong College, Newcastle-on-Tyne.
7	Society of Public Analysts. Ordinary Meeting, 8 p.m.	Burlington House, Piccadilly, London.
8	Institute of Chemistry (Liverpool Section)	St. George's Restaurant, Redcross St., Liverpool.
8	Institute of Metals (London Section): Chairman's Address, Dr. J. L. Haughton. 7.30 p.m.	85-88, The Minories, Tower Hill, London.
8	Oil and Colour Chemists' Association: "The Need for Research in the Oil and Colour Industry." Dr. H. H. Morgan. 8 p.m.	8, St. Martin's Place, Trafalgar Square, London.
9	Society of Leather Trade Chemists—British Section: Report from the Paris Conference. 10.30 a.m.	Shoe and Leather Fair, Agricultural Hall, London.
9	Chemical Engineering Group: "Aerosols in Industry." Dr. W. E. Gibbs. 8 p.m.	Royal Society of Arts, 18, John Street, London, W.C.1.
9	Institute of Metals (Sheffield Section): "Some Notes upon the Value of the Institute of Metals to the Local Industries." F. Mason. 7.30 p.m.	The University, Sheffield.

The Bleaching of Animal and Vegetable Oils and Fats

Notes on a German Process

In the following article, translated from "Chemiker-Zeitung," an account is given of a process for the bleaching of oils, which the author, Dr. Bruno Hassel, commends to the careful consideration of oil experts.

In a recent issue of *Chemiker-Zeitung* Dr. Bruno Hassel deals with the bleaching of oils, a process which, he states, is worthy of very careful consideration as there is still a good deal of uncertainty on this question amongst experts. The first question is how and by what means bleaching is to be achieved. The effect of bleaching and the resulting phenomena are very varied, and depend on whether pressed or extracted, lighter or darker oils are concerned. A special chapter is needed for Blubber Oils, as these, according to the bleaching methods applied, do not always produce permanent effects, and a remarkable reversion to the original dark colour is often shown after saponification. In this article the effect of hydrosilicates and concentrated hydrogen peroxide will principally be discussed. The last mentioned agent achieves particularly good results with oils and fats of very dark colours, on which bleaching earths have no effect worth mentioning, and there is the added advantage that for this method of bleaching no specially large plant is required. This article can, of course, only deal with the subject in a general way, as the types and composition of raw materials are very varied, and their origin, quality, and age are of considerable importance in bleaching. In each individual case it is, therefore, necessary first to ascertain by means of laboratory tests the suitability and the required quantity of the bleaching agent necessary for the production of the desired effect. Fresh oil lends itself much more easily to bleaching than older oil which has been in store for some time. The difference between a freshly pressed or freshly extracted oil or fat is of no importance in the bleaching process, while the decolorisation of oils extracted from spent bleaching earths or residues, being of inferior and darker quality, is difficult, and gives very varying results.

Composition of Bleaching Earths

Formerly the bleacher was dependent almost entirely on American fullers earth from Florida, which can be used in the natural state, whereas this has now been not only surpassed, at least in Germany, but entirely cut out by the German products of almost exclusively Bavarian origin on account of the greater efficiency and lower cost price of the latter. According to their chemical composition they are hydrosilicates of calcium and magnesium. These new bleaching-earths are put on the market in many varieties and under many names, and there are many different prices and degrees of efficiency. It cannot always be said that a cheap bleaching earth really turns out to be the most economical in working practice.

A good variety of earth must be effective in the smallest quantities, so that the least possible loss is incurred through the absorbent capacity of the earths for oils. Even if it is possible to recover by means of extraction nearly all the oil which is held by the bleaching earths, this oil is still of an inferior quality, and the cost of extraction must be taken into consideration. This merely goes to show that in purchasing bleaching earth the price is not the only thing to be considered. Experience almost always shows that larger quantities of cheap earths are required for the same bleaching results than of a more expensive hydrosilicate, so that greater loss is sustained through oil remaining in the earths. Excessive use of bleaching earths and increase in the loss of oil can cause a cheap hydrosilicate to turn out much less profitable than a more expensive one. It is frequently required of a good bleaching earth that it lends itself easily to regeneration. If, however, it is taken into consideration that the process of regeneration is fairly costly, and that the earth recovers only 40–60 per cent. of its original activity, it is extremely doubtful whether the process is worth while. This also applies to the re-using of good extracted earths by way of eking out highly effective earths. It is doubtful whether this eking out can be successfully achieved as the effect of the highly active earths would be impaired, and the loss of oil would be increased, according to the addition of supplementary earths.

Bleaching earth manufacturers are working ceaselessly towards the perfecting of their products, so that those in the industries concerned should continue to ascertain by means of tests the degree of efficiency of the various grades which appear on the market. In this way they will always be able to select those which are most suitable and profitable for the particular factory conditions and the materials to be bleached.

In the manufacture of fats and oils for edible purposes, the raw material must always be subjected to a refining process, which falls into three divisions: freeing from acid, bleaching, and deodorising. The freeing from acid must be done before the bleaching, and removes from the oils the free fatty acids contained therein. In most cases a quantity of caustic soda solution corresponding to the free fatty acid content is added to the oil. This results in the formation of a soda soap in the form of flakes. The flakes subside and are drawn off from below, and the oil is washed several times with warm water, until it is free of soap, that is, until the last washing-water shows no reaction with phenolphthalein. After the oil has been dried by means of heat and reduced pressure, it is ready for bleaching. Caustic soda solution is to be preferred for neutralisation because of the partial decolorisation of the oils which it produces. The bleaching process itself is very easily carried out. It can be done in an open vessel fitted with a steam coil or steam jacket and a stirring apparatus, or, better still, in a closed vessel which can be operated at reduced pressures.

Methods of Treatment

Vacuum treatment has the advantage that the bleaching effect of the earths is considerably increased, and consequently less earth is required. The stirring apparatus (mechanical stirring gear is used practically everywhere nowadays) must be so arranged that intimate mixing of the hydrosilicate and the oil is caused, that the powdered earth will always be kept in suspension, and that the so-called dead spaces, where the bleaching agent can settle, are eliminated. Agitation by air is not particularly advantageous, as the effect is not regular, and oxidation can be caused through the contact of the air with the oil, which, however, does not impair the bleaching process itself. In fact, the action of the air assists and increases it, but it can give rise to unfavourable results in the further treatment of the oil. When using a good quality earth an application of 2 to 4 per cent. is generally sufficient in the case of edible oils, and this should result in a complete and perfect bleaching. According to the composition of the oil the bleaching process lasts from 20 to 60 minutes, and under reduced pressure it seldom takes longer. The required temperature varies between 60° and 70° C. The completion of the bleaching process is ascertained by means of filter tests with a glass funnel and filter paper. The bleaching agent can be satisfactorily separated from the decolorised oil by means of a filter press. The presses must be large enough to hold at least one, if not several charges. Here, again, it is advantageous to use an earth of greater bleaching effect so that smaller quantities are required, as the presses fill up less quickly and can be worked longer without having to be cleaned. Cleaning must not be undertaken until the press is completely filled with solid cakes of bleaching earth, which should be blown out by means of steam or air. The oil which has been blown out with steam is inferior to the filtrate, and should be kept separate, and subjected to a further bleaching process, whereas the oil which is blown out by means of air is equal to the filtrate, with which it can be further treated. It is not possible to blow out all kinds of oil with air, as in the case of linseed oil and soya oil, for instance; it sometimes happens that on opening the press it bursts into flames. In the case of a well-filled and well blown out press the earth cakes should not contain more than 17 to 25 per cent. oil, according to the amount of cake. By means of extraction this oil is almost entirely recovered, but is, as already mentioned, inferior, as this comparatively small amount of oil contains practically the total content of colouring matter, slime, and decomposition materials which have been absorbed by means of the earth from the entire charge.

Oils and fats for technical purposes are generally bleached without preliminary neutralisation, provided that the free fatty acid content is not too high, in which case a successful bleach cannot be obtained without previous neutralisation. Oils and fats extracted from spent bleaching earths and other residues which are very dark and have a high fatty acid percentage, also waste-products from the refining such as neutral oil fatty acid mixtures, are either impossible, or extremely difficult to bleach with earths. In such cases bleaching carbons which were better suited for this purpose were considerably used, and sometimes a certain quantity of bleaching earth was added. A remarkable bleaching effect is, however, produced in the case of these dark products of high acid value by the use of concentrated hydrogen peroxide as a bleaching agent.

Removal of Colour

It is stated in the publication of the patent* that very dark oil can be bleached to golden yellow in a short time even when the usual processes with fullers earths, benzoyl peroxide, ammonium persulphate or potassium bichromate and hydrochloric acid, etc., have entirely failed. As the writer was extremely interested in the effect of this preparation, no time was lost in experimenting with it, and excellent results were obtained. In these tests very dark soya oils, coco-nut oils, and blubber were used; all had been recovered by means of trichlorethylene from spent bleaching earths. If it is taken into consideration that oils recovered in this way are very considerably mixed with slime and dyestuff carriers, and that trichlorethylene possesses in a large measure the capacity of dissolving such materials with the rest, it is quite understandable, as these oils and blubbers are of such a dark colour and inferior composition, that in spite of much trouble and the application of various bleaching agents either no results at all, or only very feeble ones were obtained. It was, therefore, all the more surprising that concentrated hydrogen peroxide should give good results. In a comparatively short time, and with the application of a small amount of bleaching agent in quite simple apparatus, it was found possible to bleach these dark oils and blubbers thoroughly, and besides this a considerable improvement in colour was obtained. This bleaching process worked out favourably as regards cost in the case of very dark and inferior oils, especially when the small labour costs and simple methods were taken into consideration, since these oils could be used straight away for technical purposes, chiefly the manufacture of soap. The blubbers certainly show, when saponified, a marked tendency to revert to the old colour, also the odour became stronger, so that the chances of using the bleached blubbers for soap manufacture are very slight. To what extent it is possible to use these blubbers for other technical purposes the writer has no experience. No satisfactory explanation of this peculiar phenomenon was forthcoming, until a short time ago, in the *Seifensieder Zeitung*, 1925, No. 12, the chemist Grosser, from the results of his experiments reported similar experiences. He attributed this state of affairs to the fact that "a colourless labile compound is formed by the fat molecules, or colouring matter of the oil and the oxygen which is separated from the H_2O_2, and is broken down by the subsequent saponification." Grosser bases his opinion on the fact that the dark colour of the blubbers is principally caused by oxyfatty acids, which are not affected by the oxidising effect of the oxygen, but by the addition of oxygen are carried on as colourless compounds, whereas in the case of other oils and fats the dark colour is caused less by oxyfatty acids than by dyestuffs. These explanations and reasons in the light of previous experience appear to the writer to be correct and intelligible.

Elimination of "Taste"

Oils pressed from oil seeds, particularly those of the first pressing which require bleaching to a light golden yellow colour, are easily treated with concentrated hydrogen peroxide. They need, however, a subsequent neutralisation, which not only removes the free fatty acids, but also the peculiar "bleached" taste caused by the treatment with hydrogen peroxide, in order to render them perfect for consumption. It is quite a different matter with extracted oils. The bleaching in itself is just as quickly and easily accomplished, but subsequent neutralisation does not remove the somewhat flat extraction taste which is common to all extracted oils. These therefore, cannot be used for consumption without deodorisation. With edible oils the usual normal refining process is followed, i.e., neutralisation, washing, drying of the oil, followed by bleaching with hydrosilicates and the separating of these from the bleached oil by filtration, and lastly, deodorisation by means of live steam and reduced pressure.

In the manufacture of edible oils and fats, especially those which have been obtained by extraction, treatment with hydrogen peroxide does not show any particular advantage, and there is no special saving in plant. This, however, does not affect the astonishing results of concentrated H_2O_2 in the bleaching of very dark oils on which other agents have practically no effect. In the writer's experiments the oils used were filtered to remove the mechanical impurities. According to the variety of oil an application of 1–3½ per cent. H_2O_2 at a temperature of 55–75° C. was necessary, the time required for bleaching being 1½–4 hours.

* Patentee, E. Merck, Darmstadt.

The British Industries Fair

Preliminary Plans and Particulars

On Tuesday at the Department of Overseas Trade, London, Sir Charles Higham, the well-known advertising expert, gave details of the publicity plans for the forthcoming British Industries Fair at Birmingham and London. Incidentally it was announced, for the first time, that the London Section would be housed at the White City.

Sir Charles Higham has been called in by the Government, and it will be recalled that the Fair has been awarded a £20,000 Treasury grant. Sir Charles has submitted a comprehensive scheme of advertising in the general and technical press throughout the world, and it will be the largest publicity campaign ever entered upon by such an undertaking. Every possible means will be used to get buyers from abroad, and particular attention is being paid to countries where distance necessitates early notice. The department has a list of over 50,000 live buyers, and each will receive two circulars and appropriate literature together with detailed instructions, and a request to forward relative information to the authorities on forms provided. These will be printed in ten languages and will reach every country in the world where buyers are to be found. Sir Charles appealed to the technical press to support the Fair, and added that while he had been previously a severe critic of the Board of Trade and its activities, he was pleased to admit already that he had found the organisation and efforts in connection with the Fair extremely efficient, and no channel was being left unexploited in order to bring buyers to the Fair.

It was reported that already the bookings were very satisfactory—10,000 sq. ft. was booked almost immediately by post—and the prospects all pointed to a remarkable success. In some cases, however, a few of the largest firms were inclined to stand out. For their own good and for the sake of the Fair and trade generally, these firms should be brought in. It was suggested that perhaps the exhibitors did not realise the possibilities. Last year, for instance, there were over 400 buyers from Holland and nearly 400 from Australia, and this year those figures would probably be increased.

Open to the Public

It had been decided to open the fair to the general public every evening from 5 to 8 p.m. at a charge to be fixed later—a shilling was indicated. A further important point was that firms who wished to were to be allowed to sell to the public. There had been considerable differences of opinion on this point in various retail trades, but, if necessary, the exhibitors who wished to sell direct would be housed in a separate building. There was a strong feeling that a list of all exhibitors should be published, and that a list of firms booking space should be available for the press each week. Colonel Cole said that he would place the suggestion before the Advisory Committee.

It was arranged that preliminary plans and information should be sent to the press in advance, and, indeed, the whole publicity policy is a distinct improvement on past years.

Chemical Papers at the Library Conference

Press, Indexing, and Patents

At the week-end conference at Balliol College, Oxford, of the Association of Special Libraries and Information Bureaux, presided over by Dr. R. S. Hutton, there was a considerable number of delegates representing chemical societies, chemical firms, and other chemical interests, while some of the papers dealt with matters from the chemical point of view. Three of these are noticed below.

Newspaper and Library

In a paper on "The Press in Relation to Information Bureaux and Special Libraries," Mr. F. E. Hamer (Benn Brothers, Ltd., editor of The Chemical Age) said the first point to be frankly recognised was that the standpoint and the function of the journalist were widely different from those of the librarian. Both the library and the newspaper, however, and therefore the librarian and the journalist, had a common interest in the collection and distribution of knowledge, though what the one called "knowledge" the other called "news." The daily journal covered in a fashion the whole range of human interests, and intensive treatment was impossible. Yet even in those rapidly produced and rapidly moving pages of contemporary history there is much of more than ephemeral interest, of which the man of affairs must keep note, and which, a few years hence, might be invaluable to the student of history if he was to recapture the spirit of the period. Similarly, the weekly journal, even where it claimed to be authoritatively scientific or technical, must of necessity be largely a collection of the week's news. The library and the newspaper, although they touch at so many points that neither could safely ignore the other, were governed by different standards and aims. The library was concerned with facts of permanent interest, from which all irrelevant matter has been carefully strained; it aims at an athletically spare and accurate record. The newspaper was a net of much wider mesh, which freely let through what was of no abiding importance, but yet retained many things that the historian or the student may not miss without risk of loss.

With these reservations he welcomed the invitation to the press to co-operate in the movement. How lamentably lacking even the Government was up to a few years ago in the recognition of the profession or art of responsible news collection was shown in the Defence of the Realm Regulations, in the drafting of which the very existence of such a thing as the press was so completely overlooked that absolutely no distinction was drawn between the worst type of enemy spy and the best type of accredited newspaper correspondent. Although much progress had since been made, there was still nothing to compare in this country with the periodical press conferences at White House in Washington, or any scientific publicity services comparable to the excellent notes and reports issued by the U.S.A. Bureau of Mines and similar bodies. The reasons commonly assigned were (1) lack of funds, (2) distaste for doing something never done before, and (3) the view that the public existed for the department and not the department for the public.

Nor could the Government and its departmental services be regarded as the only or even as the chief offenders. The objection to publicity, as something low and even vulgar, was firmly entrenched in the directors of industry and still more in the councils of some of our scientific societies. It was a common lament that the public know little or nothing of the service that science rendered to civilisation, and had no notion of the number of points at which research, even of the most abstract type, was constantly touching life in the most fruitful and quickening way. Nor would the public ever know and understand while it was the deliberate policy of scientific society councils to keep all knowledge of such matters to themselves. In the policy of the closed door, whether in business or in science, selfishness as ever in the long run defeated itself by shutting out more than it shut in.

He gathered that the Bureau was not to be a depository of universal knowledge, but rather a clearing house, which, without supplying the actual information, puts the inquirer on the right track. It was here, perhaps, that the movement was most completely in accord with newspaper practice, for the newspaper office rather resembled the police station in the sense that so many people instinctively turned to it as a last resource. The inquiries were of the most varied and unexpected character, and indicated the surprising degree to which even well-organised concerns of large dimensions and skilled intelligence had no notion where to turn for information—often quite commonplace—concerning their own business.

The methods of filing information for meeting such inquiries varied, no doubt, with different offices from elaborate card indexes to the most elementary arrangements, but often what really saved the paper was the newspaper man's habit of using his wits and imagination to meet an emergency. He commended to the librarian the value of imagination as a necessary supplement to the best kept files. Invaluable as industry and system were, sight was often still better.

Discussing the place of the technical journal, he gave instances in support of the view that while the larger chemical concerns had intelligence services of a high order, the firms of moderate size had much yet to learn, and that American firms get more value out of the technical press because their watch for new starting points was so much more alert and systematic. Finally, the following conclusions were offered :—

1. That the press must be regarded as an essential part of any national informational service.

2. That the research and especially the industrial works library, which does not include current publications in its scheme, runs the risk of missing information often of vital value.

3. That apart from published matter, the newspaper office is already a widely recognised clearing house and liaison agency for public informational purposes.

4. That for these reasons the closest co-operative and supplementary relations should be encouraged between the Association and the press of all classes.

5. That Government departments, the public services, and many of the scientific societies, would appreciably increase their usefulness by a more liberal recognition and practice of the principle of publicity.

Indexing

Mr. T. F. Burton, in his paper on "Indexing," said that the publication of abstracts was the most valuable means of conveying news to the world in general or to any particular section of it. The most important abstracting bodies were the newspapers. Was it too much to ask for a Governmen subsidy to aid the production of scientific abstracts by properly constituted bodies? One chemical abstracts publication, he suggested, should suffice for both British and American chemists. Another suggestion was for a central clearing house for abstracts.

Patents and Special Libraries

Dealing with the subject of patents and special libraries, Mr. H. E. Potts, M.Sc., chartered patent agent, first stated a general characteristic of a patent. It is only valid if there has been no publication of the subject matter prior to the filing date of the application. For patent purposes, they were therefore constantly faced with the problem of determining what information was actually available to the public at a given date. It was not sufficient to defeat a patent to show that other people knew of the invention or even that printed publication had occurred abroad; to upset a patent on this ground, it was necessary to show that publication occurred within this realm. In the ordinary way, the date of publication might be taken as the date on which the document was laid open for public inspection at the Patent Office Library, but a patent might be anticipated by a document of which very few copies had reached this country, and it was therefore important that all libraries should clearly mark their journals with the date on which they were received. Intricate questions might sometimes arise as to whether publication had actually occurred or not, but it was generally agreed that once the invention had been published, it had thereby been dedicated to the public. It was seen therefore that the information must be "available to the public" and the precise date of

this information might be of vital importance, and therefore it followed that librarians should take special care to be able to establish the date on which any given publication was not only received but was further made available to the public.

In considering how the various Patent Offices of the world have dealt with this problem it had to be agreed that the system of the British Office was undoubtedly a superb achievement. The whole of the British Patent specifications have been abridged and collected into the well known volumes of abridgments, and these have then been indexed by a liberal use of cross-indexes and a complete disregard of the distinction between process terms and concrete terms, which is found in practice to give excellent results.

To illustrate his views as to the methods of searching and indexing the speaker mentioned the method he had adopted in filing an exhaustive index of a particular field of chemical inventions upon which he had been working for the last two years. After studying the Kaiser system, it was decided that a simpler system would be better for his purpose, since it was thought that it would be impracticable to provide half a dozen index cards for each item. The system ultimately evolved was to cut out the British abridgments and to mount them on large cards, which were then physically separated by guide cards having tabs, care being taken not to carry the subdivision too far. The detailed subdivision was performed by cross-indexing by means of small detachable flags of about eight different colours.

In conclusion a definite proposal was put forward, that this association might find it possible to obtain from the British, German, Dutch, American, and Swedish Patent Offices the full particulars of the methods of indexing and searching which they employ, since this information might be of great value.

Prospects of the Superphosphate Industry

Further Government Inquiry Urged

SPEAKING at the general meeting of the Anglo-Continental Guano Works, Ltd., in London on Wednesday, the chairman, Sir Archibald Mitchelson, said that in their trade foreign competition still continued and had never slackened. The quantities of foreign superphosphate imported had been abnormally large, while home consumption had been below normal. Indeed, the manufacture of fertilisers generally was far from profitable at present, but they were perhaps justified in regarding the future with optimism.

Mr. E. G. Martens, managing director, said that with regard to the manufacture of superphosphates we were not working on even terms with the Continent. He spoke from actual experience, as their company had a large interest in both a French and a Belgian superphosphate works. There was no doubt that 1s. on the Continent, converted into francs, could buy more than in this country. Freights from North Africa to this country were higher on account of the higher cost of discharge as compared with Continental ports. Wages, local rates, etc., and all overhead charges were dearer per ton in this country. Our superphosphate plant, he said, was up to date, and the Continental manufacturer could not teach us anything new. They were not afraid to compete with any manufacturer abroad on even terms. The recent drop in the Belgian exchange from 95 to 110 had been the cause of foreign offers of superphosphate converted into pounds sterling being made at again lower prices in spite of a firm market on the Continent. This showed that it was not more up-to-date methods of manufacturing which made it possible to make these low offers in this country. He believed that this was a case where the Government should look again into the whole question. (Hear, hear.)

They were prepared to go on for another season to make superphosphate for sale, since they had bought the necessary raw material. If by then the outlook was no better, he would strongly recommend the fellow-directors to take such steps so as to protect the shareholders' interests. They would then have to give up making superphosphate for sale and utilise their works for making other articles on which a profit could be made. (An article on necessary improvements in British superphosphate production, written by an expert, appears on p. 351 of this issue.—ED. C.A.)

Sir Archibald Mitchelson was re-elected a director.

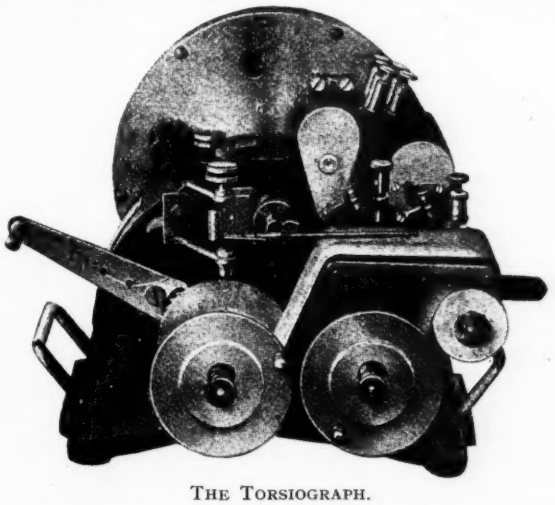
Scientific Instruments at Cologne

A Feature of the Technical Fair

(FROM OUR SPECIAL CORRESPONDENT.)

As was intimated last week in the preliminary report which was despatched from Cologne on the opening day of the Fair, the exhibition showed little of interest to the chemist, except the large display of measuring instruments for industrial and laboratory purposes.

Among the more interesting devices featured was a special torsiograph, made by a large Hamburg firm, which is seen in the accompanying illustration. This is a sensitive instrument for measuring the critical periodic stresses in machines and is similar in principle to the seismograph employed in detecting earthquake motions. It is fitted with a pulley, the moment of inertia of which responds readily to the minutest changes in the angular velocity of the shaft, and reproduces the frequency and phase of the torsional vibrations in the test shaft, recording their magnitude to a given scale on paper which is fed automatically through the instrument. It is claimed that



THE TORSIOGRAPH.

the torsiograph will record vibrations having a frequency as high as 15,000 per min., and will work under adverse circumstances on steam turbines and motor trucks, as well as in an upside down position. Torsional oscillations may attain considerable magnitude, as, for instance, in the case of high speed oil engines, and often cause the breakage of the shaft. Fractures of connecting-rod bolts, bearing cup studs, bedplates, flywheels and propeller blades also frequently have their origin in this destructive torsional vibration, so that its effective correction through accurate measuring may mean a considerable saving of engine parts.

Another apparatus worthy of mention was a distance indicator operated by electricity. This was designed for use wherever a graphic record is required at some distance from the material undergoing measurement, registration being transmitted to the recorder by means of electric flex. This has the advantage that the records from several machines, for instance, in different parts of a works, can be centralised and recorded simultaneously in one and the same place.

Artificial Silk

The Press delegates to the Fair were conducted over some typical factories in the neighbourhood of Cologne, including to a large iron works on the Rhine (reference to which is made in our Metallurgical Section). A silk factory was visited on this occasion, where some £5,000 worth of raw materials were being treated daily, and vast quantities of dyestuffs were being used. Artificial silk was also handled at these works, and consequent upon the tax on silk goods coming into this country the Germans are now exporting directly to our colonies, instead of trading through British channels. Among the exhibits displayed were gaudy imitation silks for sale to the natives of South Africa, while other stuffs included plush cloth labelled " Exclusively made for export to India," and it appears that Germany is developing a large overseas market in this direction.

Retirement of Mr. J. E. Davidson

Sir Max Muspratt's Tribute

As briefly reported in THE CHEMICAL AGE of September 12, Mr. J. E. Davidson has retired from the position of managing director of the Newcastle staff of the United Alkali Co. Some idea of the important work he has done in that capacity and of the estimate in which he is held by his associates may be gathered from the tributes paid by Sir Max Muspratt, chairman of the company, and others at a banquet given to the retiring members of the Newcastle staff by the directors.

Sir MAX said that after 59 years of strenuous and useful work and with the regretful concurrence of his colleagues, Mr. Davidson had left the stage on which he had played so distinguished a rôle and withdrawn from active business, but his vast store of experience was not to be lost to the United Alkali Co., or the chemical industry, and as an ordinary director they hoped to have his continued support and advice for many years to come. Mr. John E. Davidson combined in his person the best business qualities of the Englishman and the Scot. His services to the chemical industry as a whole and the great company of which with James Tennant he was the sole surviving parent, far transcended even his services on the Tyne. Clyde Wharf, Bay City, the Spanish Mines, were all his offspring, in conjunction with their friend who had gone, Mr. John Rayner. From the countless business arrangements which he had from time to time negotiated, had evolved that spirit of co-operation which had made the chemical industry the best organised industry of Great Britain, a marvellous achievement for one in whom the flame of individualism had always burnt so brightly. Sir Max wished him long life and health to enjoy his leisure.

The withdrawal of a great personality had inevitable repercussions on his lieutenants; coupled with that was the necessary reorganisation which the great changes in their industry required. It had been considered desirable to carry this out as a complete scheme. The gentlemen who retired had all rendered long and faithful service and, like their chief whom they had so loyally served, had well earned their leisure. In their retirement they would have the good wishes of the directors and such material recognition of past services as the circumstances of the industry permitted.

In Mr. Alfred Davidson, who had now assumed the position of General Manager of the Newcastle District, the Board had the utmost confidence. A new office at Gateshead would be erected shortly, and a successful future for the Tyneside chemical industry was the sincere wish of the Board.

Mr. T. W. STUART said that he was glad to have the opportunity of supporting all the Chairman had said about his old colleague. As young men they entered the chemical industry at the Allhusen Works, in the year 1866, within two months of each other. Mr. Stuart thus had ample opportunity of admiring Mr. Davidson's brilliant abilities and great industry, by which he had attained his present high position. He wished him a happy retirement.

Mr. Davidson's Reply

Mr. J. E. DAVIDSON, after thanking the speakers for their tributes, said that he now proposed to take up the attitude of a boaster and the foundation of his attitude was this, "Let not him who putteth on his armour boast as he that putteth it off." He could commend that proverb to those who were coming, as well as those who were going. He had been in the alkali trade for nearly 60 years and, by reason of health, believed that he had not lost a month over the long period in question. He had been surrounded by colleagues who had given him the greatest possible assistance and support, and with whom he had lived upon terms cordial in the highest degree, and for these facts he thanked them. He felt so much indebted to his colleagues that he wished to mention the following particulars of their association together:—Mr. Wilfred Farr, 40 years; Mr. Richardson, 52 years; Mr. Lane, 53 years; Mr. Cook, 47 years; Mr. Scott, 46 years; Mr. Cadwallador, 44 years; Mr. Hilton, 37 years; Mr. Portus, 43 years; Mr. Martin, 45 years.

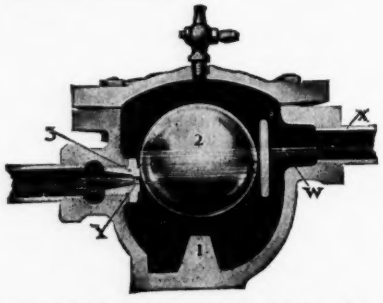
They had lived together with one object—to respect each other's positions, to live on terms of good fellowship and friendship, to discharge the duties allotted to them with conscience, and finally the dominating idea and motives which had inspired them had been the existence and prosperity of the United Alkali Co.

He observed, with regret, that when he went into the alkali trade there were 27 or 28 alkali works in existence on the Tyne. Unfortunately, practically all had disappeared, with the exception of the well-equipped works at Gateshead and Hebburn, the property of the United Alkali Co. He wished particularly to say that by reason of the excellent support and assistance given to them by the managers of the works, Mr. Rudge and Mr. Watson, together with the various under-managers, foremen, and workmen, all of whom had supported the office in the most excellent way, they had invariably supplied goods of the highest qualities—it was the rarest thing possible to have a complaint of the Allhusen or Tennant Works' products. By their assistance, and by the high quality of their goods, they had maintained the reputation of the United Alkali Co., together with the confidence and esteem of the various consumers of heavy chemicals, not only in the United Kingdom, but throughout the world where the brands were known.

In conclusion, Mr. Davidson referred to the value of Sir Max Muspratt's services as chairman, quoting the words, "Seest thou a man diligent in business, he shall stand before kings, not before mean men"; he said that that assurance was realised by them that day. They in the Newcastle office were favoured by the presence of Sir Max Muspratt and the directors from Liverpool. For his own part he congratulated himself that he had had the honour of being associated commercially with Sir Max Muspratt, who was not only a most able man, naturally a speaker of the first rank, but a fair-minded man in every question put before him. He was arduous in every way and had far-reaching knowledge of the alkali trade in detail, and generally had much sympathy with men in every position in life. They thanked him and the directors for their confidence towards them for many years, and desired to assure them that they profoundly appreciated the liberal provision made for the rest of their days. He associated with those remarks all those who had laboured with him, and together they wished permanent and constant prosperity to the United Alkali Co.

A Simple Steam Trap

A STEAM trap of particularly simple construction is manufactured by the Key Engineering Co., of Elevator Road, Trafford Park, Manchester, and of London. This is the "Simplicity" steam trap. The claim is made that it has fewer working parts than any other positive action trap. There are but two working parts—a fixed discharge orifice, and a ball which floats freely. The face of the orifice provides the valve seat and the ball which acts as valve and float control is made of nickelled copper.



When water first flows into the trap at X and begins flowing out of the discharge orifice (Y), the ball (2) floats to, and is held against, the discharge bushing (3) by the unbalanced steam pressure. The discharge orifice is completely sealed until the water level (W) in the trap begins to rise, when the ball goes upward on the face of the discharge bushing (3), exposing part, or the entire area, of the discharge orifice (Y)—depending upon the quantity of the water entering the trap at (X). When the quantity of water entering the trap decreases, the level of the water (W) drops to the point where the ball again partially or completely covers the discharge orifice (Y) and is held tightly against the face of the bushing (3) by the unbalanced steam pressure.

The ball frequently presents a fresh surface to the orifice and thus wear is lessened. The valve seat, which is made of special alloy for pressures of 160-250 lb., can be quickly unscrewed from the inside.

Mass Production in the Superphosphate Industry

The Contrast between British and Other Methods

The author of this article is a well-known authority on the superphosphate industry, and his contribution appropriately follows up the criticism and suggestions published in THE CHEMICAL AGE *of September 12.*

THE report of the Superphosphate Committee has created a good deal of interest, and several facts have been revealed in regard to the industry which are worthy of more than passing attention.

It is becoming increasingly evident that mass production is having an influence on the fertiliser industry in somewhat the same manner as it has influenced many other fields of the industrial world.

The cost of production is largely affected by the scale of production, and in Europe particularly, owing to short-distance transport, the small works are steadily finding it more difficult to compete against the larger works.

In the United States of America this factor is not quite so potent, on account of the enormous size of the country. Comparatively small works are able to operate within a considerable radius, and are not affected by mass production which is operating perhaps a thousand miles away.

There are indications, however, that English manufacturers will have to consider this matter more closely in future on account of the large scale production which is developing on the Continent.

In the report of the Superphosphate Committee it is stated that there are 85 members in the Fertiliser Manufacturers' Association of Great Britain. The largest output of all the works in this country was 806,800 tons in 1913, which averages approximately 9,500 tons per works per annum.

Further, the first superphosphate factory has now been erected in North Africa in close proximity to the mines, which is a new development in the industry, and may yet have far-reaching results.

Continental visitors to English works are generally astonished at the man-handling of goods which still goes on. Mechanical handling is still in its infancy as far as the fertiliser industry in Great Britain is concerned. There is no question that the overhead crane with grab bucket is going to play an important part in all future developments of any size. It has this great advantage—that it can handle the raw materials as well as the finished goods, which is impossible with any other system. Mechanical dens installed in a crane-type building are undoubtedly the best and most economical proposition for a works aiming at an output of approximately 100,000 tons per annum.

Most of the large works in America are erected on well-chosen sites, and so are some of the Continental works. Sea and rail transport are almost essential when either the raw materials, finished goods, or both, have to be sea-borne.

American Production Methods

Reference has been made in preceding issues of this journal to American methods. These methods have developed to suit the special conditions of that country, which are quite different from European. Owing to their immense territory, unaffected by economic barriers, there is a suitable field for mass production which has been established in several centres. These large works are quite a revelation to Europeans who visit them, and it says much for the courtesy of the American fertiliser manufacturers that they are always willing to throw open their works to visitors with complete generosity. One cannot fail to notice the excellent mechanical facilities provided for handling the materials at all stages. This, of course, is absolutely essential where large scale production is being carried on, but there is every reason for British manufacturers to study this question more closely on a scale to suit their smaller requirements.

A brief description of mass production in America may be of interest at the present juncture. The Davison Chemical Company's plant at Baltimore is the largest superphosphate works in the world, and is capable of producing approximately 500,000 tons of superphosphate per annum, which is practically equal to the entire production of the British works at the present time.

In a plant of this size "the flow of materials" is the first essential in the question of design. Steamers bringing the phosphate are unloaded by means of two gantry cranes equipped with grab buckets. These dump the phosphate into wagons which hold approximately 324 cu. ft., or 20 tons. They are hauled into the works by small electric locomotives, and pass over a weighbridge where the weight is recorded. The phosphate is grabbed out of the trucks on to storage heaps. From 5 to 10 per cent. is left in the trucks, which is recorded as tare weight back over the weighbridge. The phosphate is again grabbed from the storage heaps by an overhead crane, which deposits it in large storage bins above the grinding mills. These bins have a capacity of 18,000 tons. With this system a cargo of 5,500 tons can be discharged in eighteen hours, which is approximately 300 tons per hour.

The superphosphate building is of steel construction, about 400 ft. long, 60 ft. high, with four bays each about 75 ft. span, and served with 15-ton overhead travelling cranes.

Description of Plant

These cranes are electrically operated, and equipped with 3½ cu. yd. clamshell buckets. In one lift these take 5 tons of rock or 3 tons of superphosphate.

The grinding plant consists of eleven Raymond mills, each having a capacity of approximately 3 tons per hour on Florida rock. Working twenty-four hours, the complete installation has a daily output of 770 tons. The fineness of grinding is 97 per cent. through a 100-mesh screen.

The ground phosphate is stored at a high level, which is incidental to the Raymond system. From these bins, it gravitates to the mixing plants.

The superphosphate dens are stationary and consist of six concrete receptacles, rectangular in shape, about 25 ft. deep, each holding about 300 tons.

There are three mixing platforms, each serving two dens. These platforms travel over the dens, making a seal with each. On each platform there are two vertical mixers of 2 ton capacity, two phosphate weighers, and two acid measurers. When one den is full, the mixing platform is moved on to the adjacent den. Three men operate the mixing plant on each platform. It takes about eight hours to fill a den, after which it stands from five to six hours.

The cutting out is done by the overhead crane with bucket, and the time taken is from three to five hours, depending how far the crane has to travel with its load.

This plant is remarkable in that hand labour is reduced to a minimum.

The number of men operating the superphosphate plant is remarkably small, and the output per man is approximately 275 tons per month, or 3,300 tons per annum.

In the report of the Superphosphate Committee the figures given by the Association in regard to the number of men employed in the industry in Great Britain was 5,500. Taking the output of 1924, which is 533,800 tons, the output per man averages 97 tons per annum.

Comparing these figures with the results of American mass production, there is an enormous difference.

It was revealed at the inquiry that a large percentage of the superphosphate which is being imported into this country comes from Holland, where there is no depreciation of currency operating so as to create an export bounty. This is not surprising in view of the fact that the Dutch have centralised their industry, and are producing on a large scale.

In 1920 a very important co-operative society built a large factory at Vlaardingen. This society consists of some 9,000 Dutch farmers, who have taken up more than half the share capital, which is £500,000 sterling. The site was well chosen on the New Waterway with excellent sea and rail transport facilities. Ships of any draft may be loaded and discharged at the Works Quay. It is designed for an annual capacity of 150,000 tons.

It is quite evident that the conditions in the past under which the fertiliser industry has developed and prospered in this country are now changing rapidly, and unless the superphosphate manufacturers face the new conditions and determine to meet them, tariff walls will never save the industry.

"The Confessions of a Capitalist"

By Harold Cox

SIR ERNEST BENN has written a book which he calls *The Confessions of a Capitalist.** It is an attractive title for a still more attractive book. Though called a "confession," the book is in effect a defence of capitalism by a man who has himself succeeded as a capitalist. Sir Ernest Benn opens with the very true statement that most books on economics are dull. They do not appeal to the ordinary reader because they are too abstract. Therefore it occurred to him that he would write a concrete account of his own experiences to illustrate the economic theories on which capitalism is based. He has done this in a way which certainly will appeal to the general reader, for the style is conversational rather than dogmatic, and the book is filled with apt illustrations from daily life of the practical working of sound economic principles.

Sir Ernest Benn has made his money mainly by the publication of trade newspapers. He states that he is now securing an income of about £10,000 a year. Lest his readers should treat this confession as in itself a condemnation of capitalism, he goes on to point out that his £10,000 is earned or made or acquired, or whatever word be preferred, by directing a business with a turnover of £400,000 a year, so that £390,000 is paid away to workers of one sort or another, and only 6d. in the £ retained by himself, not only for his present service in directing the business, but for his past service in building it up. Incidentally, more than half of the 6d. which he nominally retains is in practice intercepted by the Chancellor of the Exchequer.

One of the points which Sir Ernest Benn presses in the course of his argument is the importance of commerce as distinct from manufacture. He even goes so far as to say that "wealth is exchange." It would be more strictly accurate to say that the growth of wealth depends on exchange. The point is one on which not only Socialists but also Protectionists habitually go astray. Protectionist newspapers constantly write as if the only thing that mattered was the making of things, ignoring the rather important consideration that things are made to be sold and that the making of them would be sheer waste without some organisation for selling them. That is the work of commerce, and it is, generally speaking, more difficult work than manufacturing. The same point has been well pressed by Mr. Gordon Selfridge in his *Romance of Commerce*, usefully quoted in the present volume. It is the importance of commerce that ultimately explains the comparatively large incomes that business men are able to earn. As Sir Ernest Benn puts it:—

> The business man is the agent of exchange, and because it is, as a rule, far more difficult to exchange an article than to make it, the business man generally secures the higher remuneration for his part in wealth production than the labourer who performs the simpler and easier work of wielding the hammer or the saw.

Among the agents of exchange are bankers and insurance agents, both habitually sneered at by Socialists; yet, without the banker to provide the credit and the insurance agent to take the risk, a very large portion of the world's business would be practically impossible, and people who are now drawing wages for making goods to exchange with one another through the agency of commerce would be condemned to idleness. In turn, the banker and the insurance agent and the business man depend upon persons in all classes of life who save money and invest it. Socialists seem to imagine that when their ideal organisation of society is established, saving will be superfluous; yet the Russian Soviet, after establishing Socialism, is now begging the capitalists of England to provide it with credit, and English Socialists are condemning English capitalists for hesitating to lend money to Russia without some guarantee for repayment. Not only is saving the basis of capitalism, it is also, as Sir Ernest Benn points out, essential to human life: "Unless there is saving, life comes to an end. We have only to eat all the potatoes of this year's crop to make quite sure that no potatoes will exist next year."

A very useful chapter headed "Profit and Loss" opens with the excellent statement that "the first and by far the most important function of profit is to balance loss." This is a point which the street orator habitually overlooks. He reads in the newspaper of some big dividend declared by some company, or of some big fortune left by a deceased capitalist, and he holds up that fact to his audience of comparatively poor persons as a final proof that the capitalist is a robber. He fails to mention that for every capitalist who makes a large profit there are a great many who make large losses. More important still, he overlooks the fact that the capitalist, in the vast majority of cases at any rate, only makes a profit by rendering service. Unless the capitalist organises the production or sale of something that the community wants he gets no payment and makes no profit. Nor is it true that the capitalist's profit involves loss to other people, either capitalists or labourers. On the contrary, a successful business gives good service all round, and people who deal with the successful capitalist are not robbed but benefited. It is true that cases may arise where a capitalist, or group of capitalists, is able temporarily to secure a monopoly and acquires the power to extort unfair terms from his customers; but even where a capitalist has this power it seldom pays him to use it to the detriment of the persons with whom he is dealing, for in the long run he would probably injure himself more than them. In any case, provided trade is free it is difficult for any group of capitalists, however powerful, to prevent competition.

In his description of his experiences in the United States, Sir Ernest Benn lays stress on the difference in the mental attitude of the English and of the American working man. The English working man concentrates his mind on the preservation of the "job" for himself and his pals; the American working man is keen on getting as much money as he can by doing whatever he is asked to do in the quickest possible way. As a result the American wage-earner can turn up his nose at doles and pensions; instead he buys his own house and his own motor car. He also invests his savings in industrial undertakings, often becoming a shareholder in the firm for which he works. As Sir Ernest Benn says, this is the best form of profit-sharing. It maintains the essential distinction between the functions of the capitalist and those of the wage-earner, but it makes the wage-earner himself a capitalist. At the same time it is important that the capitalistic wage-earner, like other capitalists, should learn the wisdom of not putting all his eggs in one basket.

The book may be strongly recommended to the general reader. It shows how capitalism in practice works, and it deals in a genial, good-humoured spirit with most of the favourite fallacies of the Red propagandists. One chapter might perhaps with advantage have been omitted, namely, the chapter headed "Pareto's Law." Pareto is an Italian economist who has attempted to set out in logarithmic form his theories of the distribution of wealth. It is better to leave logarithms alone in the discussion of economic problems.

* *The Confessions of a Capitalist.* By E. J. P. Benn, Hutchinson and Co. 18s. net.

"Yadil" Again

YADIL PRODUCTS (1925), LTD., was registered as a "private" company on Friday, September 25, with a nominal capital of £10,000, in £1 shares. The objects, it is stated, are to acquire the business of medical research and manufacturing chemists and proprietors of antiseptic preparations previously carried on by Clement and Johnson, Ltd., at 19, Sicilian Avenue, London, W.C., and elsewhere, together with the registered trade mark "Yadil" and all other trade marks, British and foreign, registered in the name of the above company, and to adopt an agreement with L. S. Leonard, The subscribers (each with one share) are: Mr. W. A. Smith, 12, John Street, Bedford Row, W.C., clerk. Mr. R. D. Higgs, 12, John Street, Bedford Row, W.C., solicitor. The first directors are not named, but the qualifications are 100 shares. The solicitors are Stooke-Vaughan and Taylor, 12, John Street, Bedford Row, W.C.1, and the registered office 12, John Street, Bedford Row, London, W.C. The file number is 208,626.

International Dye Products

An American Report

PRIOR to the war, Germany almost completely dominated the world's dye trade, but with recent developments has come a realignment of producers, according to the recent report of the U.S. Tariff Commission. Since 1914 the manufacture of dyes and intermediates has been established on a large scale in the United States, Great Britain and France, and to a smaller extent in Italy and Japan; while in Switzerland the industry has expanded. As a result, the world's capacity to produce dyes has nearly doubled and an era of competition has set in, which promises to eliminate many of the existing plants.

These new dye industries have greatly affected Germany's export trade, which in 1924 was 25 per cent. by quantity and 60 per cent. by value of the 1913 trade. But there is little doubt of Germany's determination to recover as large a part as possible of her lost markets, even at a high cost and over a long period of time. Germany has a large portion of the dye trade in the markets of the Far East and other consuming countries, which have no dye industries. The new dye producing countries, however, have adopted protective measures for the purpose of stimulating dye manufacture. These measures have been partly responsible for Germany's effort to affiliate with existing producers or to establish branch plants. It appears possible that affiliation, if not already effected, may be made in the near future affecting one or more individual firms in the United States.

One development of interest by the Interessen Gemeinschaft in 1924 is the reported consolidation of interests for the purpose of reducing personnel and eliminating the duplication of production, selling, and purchasing forces. It is hoped thereby to reduce costs of manufacture. Extensive developments have been made by the plants of the I. G. in the manufacture of non-coal-tar products. Conspicuous among these new items are synthetic ammonia, nitrogenous fertiliser materials, and synthetic methanol. The manufacture of the latter is closely allied with other products, such as butyl alcohol and motor fuel.

The German dye industry has long been organised on an international basis. The struggle between the dye producing nations for the export markets promises to be a long and a severe one, and in the end must result in the elimination from an export basis of those dyes which cannot be produced at a cost sufficiently low to compete with German and Swiss products.

Switzerland Second

Switzerland ranks second to Germany in the international dye trade. They produce largely the higher cost types. The post war exports trade shows a relatively smaller decline than that of Germany. They operate branch plants in the United States, Great Britain, France, and Italy. In the long run it is probable that the Swiss will find their lack of raw materials an increasing handicap in maintaining their industry on an international basis.

In the event that the German firms do not establish branch plants in Great Britain and the United States, two methods are open for their pursuance of commercial warfare against the dye industry of these countries:—(1) An attack on their export trade and (2) a direct attack by price cutting in the home markets on certain lines of key products. Both methods of procedure are reported to have been adopted in 1925. In the United States, since the tariff reduction of 15 per cent. *ad valorem* on September 22, 1924, a sharp increase in imports of the higher priced dyes has taken place.

In addition to the special measures which Great Britain, the United States, France, Italy, Japan, and Spain have adopted to encourage and stimulate dye production, Great Britain and Japan have rendered financial aid to their dye industries, and Great Britain, Japan, and Germany have put in force a licence system of dye-import control. Protective measures will play an important part in the maintenance and development of the dye industries in the new producing countries within the next five to ten years. In the long run, however, such fundamentals as (1) cost of production, (2) availability of raw materials, (3) cost and efficiency of labour and the maintenance of technical staffs, (4) efficiency of selling organisation, (5) sufficient capital without excessive capitalisation, and (6) ability to grant prompt and efficient technical service to consumers, will become decisive factors in determining what countries will survive this competitive era. The German and the Swiss have an advantage in a consolidation of companies not possessed by any other country.

Among the world's dye producers there is a marked tendency, says the report, towards (1) the production of dyes of superior fastness, (2) the manufacture of dyes adapted to special purposes, (3) the development of dyes of lower application cost, (4) increase in the number of identical dyes produced by different firms, and (5) elimination of many dyes in small demand or for which satisfactory substitutes are available.

The Ceramic Society

Annual Diuner of the Refractories Section

THE annual dinner of the Refractories Section of the Ceramic Society was held recently at the Holborn Restaurant, the President (Mr. Frank West) being in the chair.

PROFESSOR H. E. ARMSTRONG proposed "The Ceramic Society," and remarked that he was one of those who were deeply concerned and greatly dissatisfied with the public position of science—not the professional position. A striking instance was the Coal Commission. Here was the most important subject affecting the country at the present moment, and the whole position was to be considered by a body of men who had not the faintest knowledge of anything connected with it or with the problems underlying the scientific use of coal. These were problems which the gentlemen who had been appointed to the Coal Commission did not understand in any way whatever, and any report which they might present must be incomplete and partial.

THE PRESIDENT, replying, said that it was only by careful administration and by industrial research both on the practical and scientific side that losses could be alleviated, and that was where the Ceramic Society came in. It helped the members to study their problems and to try to improve their works. There was considerable waste going on on the floors of their works, and through over-burning and under-burning of the bricks, and it was up to the manufacturers to take full advantage of the information made available by the work of the scientists, and to support the Society and promote its welfare.

Following the Presidential Address Mr. S. R. HIND read a paper on "Tunnel Kilns for Burning Fire Bricks," and in it he indicated that in a few months' time the Government would be publishing a voluminous report, containing an account of investigations which had been carried on for three or four years, and which publication would contain heat balances and costs connected with the various types of kiln in use in this country. One interesting remark in the discussion was made by Mr. C. W. Speirs, of the Morgan Crucible Co., to the effect that at Gustafsberg, near Stockholm, a small electric tunnel kiln had been installed which was costing less than a coal-fired kiln.

The final paper was "A Note on Some Cases of 'Spalling' in Silica Retorts." In this paper Mr. W. J. REES (Sheffield University) referred to two cases of "spalling" in silica gas retorts, which presented unusual features and were brought to his notice during the last few months. In both cases the "spalling" occurred during the removal of scurf from the retort, small pieces of the retort material with adhering scurf breaking away from the retort body. Mr. Rees suggested the importance of using every care to avoid segregation of iron oxide in silica material which was used in gas retorts.

MR. REES, replying to the discussion, said that there did appear to be, under certain conditions, a definite mobility and movement, and a segregation of iron compounds during the burning of refractory materials. Very little was known as to the causes of this. It might be due to the formation of carbonyls or other substances, but we were very ignorant as to the precise causes.

MR. H. GAGE (Sutton Gas Co.) said that a few years ago he put in some silica retorts, and so far they had retained their shape, and gave every indication of long life.

Professor Morgan's Work at Birmingham

PROFESSOR G. T. MORGAN relinquished this week his six years' directorship of the chemical department of the University of Birmingham on taking up his new office as Superintendent of the Government Scientific and Industrial Research Laboratories at Teddington.

During these six years much research work has been done at Birmingham, besides the ordinary academic and scientific work required of 600 chemistry students.

Accompanying Professor Morgan to Birmingham were two groups of research workers who constituted the nucleus of the research school. One of these groups was contributed by the British Dyestuffs Corporation, the directorship of which at that time maintained research colonies of chemists-in-training at this and other Universities. These post-graduate workers who were engaged in the study of coal tar intermediates and synthetic dyes were valuable auxiliaries in the work of restoration, and the constitution of many mordant dyes has been investigated. The other research group originated from the newly-constituted Department of Scientific and Industrial Research. To a very considerable extent the rejuvenated research school of the Birmingham Chemical Department is to be regarded as an offshoot of the Department of Scientific and Industrial Research, for this department furnished Professor Morgan with a generous allowance for research materials and with scientific and chemical assistants. Most of the outstanding chemical research was rendered possible by this aid.

Important researches have been carried out at Birmingham by research workers on organic derivatives of selenium and tellurium. These investigations led to the discovery of several entirely new groups of organo-metalloidal derivatives not hitherto studied chemically outside Birmingham. One series of tellurium compounds is interesting inasmuch as these substances have powerful germicidal properties. In broth and in certain fluids of the body they kill pathogenic bacteria far more effectively than does carbolic acid, but lose potency in blood serum. A process has been devised at the Chemistry Department for the large-scale separation of cobalt from nickel and other metals, and new cobalt derivatives have been discovered. Gallium and germanium has been the subject of scientific inquiry, and a study of zirconium derivatives has been completed. Molybdenum, which is finding increasing industrial application as a constituent of important alloys, had also been investigated, as were the organic derivatives of antimony.

Chemists at Port Sunlight

ABOUT 300 members of the London Pharmaceutical Associations visited Port Sunlight last week, at the invitation of the Vinolia Co., and were received by Lord Leverhulme and Mr. F. D'Arcy Cooper, chairman of the company. During the visit, Mr. Herbert Skinner, councillor of the Pharmaceutical Society of Great Britain, laid a wreath on the tomb of the late Lord Leverhulme. The party was entertained at luncheon, and Mr. Hartland-Swann, proposing the health of the guests, said that competition from abroad forced the multiplication of new lines in the chemist and druggist trade. In view of this vast importation of foreign goods, he wondered whether distributors and manufacturers could not join hands and endeavour to help towards a solution of the unemployment problem by pushing the sale of British goods.

A New Road Surfacing Material

A NEW method of road surfacing has been invented and tested by Mr. Lewis Evans, surveyor to the Blaenau Festiniog Urban Council. He makes a mortar from a mixture of glutin and slate dust to which is added granite macadam. It is claimed that a hard resilient surface results, having at least four times the life of water-bound macadam. Slate dust is a waste product of the quarries and glutin is a residual from pine wood which has been pulped for paper making, so that, Mr. Evans claims, the manufacture of his product would materially assist industry. It is thought that the cost would be about 8d. per square yard more than the cost of water-bound macadam. The product is to be subjected to severe tests by local authorities.

Indian Chemical Notes

Dyeing in Madras

A RECENT report of the Department of Industries, Madras, states that as regards the dyeing industry generally the chief centres, such as Madura and Salem, appear to have been busy, but there is a feeling that the industry would be more prosperous if the tariff values and duties on dye imports were lower. Alizarine is still the individual dyestuff in greatest demand, but the vat colours and sulphur dyes do not appear to have made the progress expected—probably the high price of the former is against their extended use whilst with the latter there are certain unpleasant features associated with the dyeing which may adversely affect the extension of their employment.

The Industrial Chemist reported that during the course of his tours he twice came in contact with European representatives of British dye manufacturers touring the country with local representatives and getting into direct touch with the country dyers. This was always a feature of the German organisation, and some years ago the necessity of adopting this procedure was pointed out by this department to the premier British dye manufacturers. It is certainly the only way of establishing intimate relations with the dyers. A great deal of propaganda and distribution of samples in the right quarters will be necessary for some time to come, if the use of British dye stuffs is to expand and develop, for the brands and marks of the German firms are still remembered and are given a certain preference. The prices of dyes from all sources are much higher than in pre-war days in spite of the keen competition between agents of British, American, and Continental manufacturers.

U.S. Dye Production Decreases

DECREASED activity in the domestic textile industry was largely responsible for the 27 per cent. decline in the output of the United States dye industry in 1924, as compared with 1923, according to a statement issued by the United States Tariff Commission.

The total production of coal tar dyes in 1924 was 68,679,000 lb., the maximum output in 1923 being 93,667,524 lb. The sales in 1924 totalled 64,961,433 lb., valued at $35,012,400. The pre-war output of seven firms in 1914 was 6,619,729 lb., valued at $2,470,096. During that year the intermediates required for the manufacture of dyes were almost entirely imported, chiefly from Germany. Dyes of domestic manufacture now supply about 95 per cent. of the home consumption, and there was an exportable surplus of certain dyes amounting to 16,000,000 lb.

"Notable progress was made in the manufacture for the first time in this country of many valuable dyes of high fastness," the commission points out. "More than sixty dyes were manufactured in 1924 which were not produced in the previous year. These products show that the industry has made marked progress during the year in producing many complex types, including dyes of high fastness for cotton, wool, and silk, while work now under way may be expected to add materially to the variety of dyes and other organic chemicals produced in this country."

The average price of all dyes sold in 1924—54c. per lb.—was a 2 per cent. decline from that of the previous year.

How to Catalogue Periodical Publications

A GOOD—if not, indeed, a unique—method of cataloguing the periodical publications in public libraries is illustrated in a handy little catalogue just received from the city librarian of Coventry (Mr. Charles Nowell). In addition to giving a complete subject index and alphabetical index, the catalogue shows at a glance all the publications dealing with one subject. On page 28, for example, the periodicals on chemistry and chemical engineering are grouped in a definite order, each entry clearly showing the libraries where the periodical may be seen. One of the most important features of the catalogue is the indication by an asterisk which periodicals are filed, and by number which periodicals are indexed, the numbers referring to indexes listed on another page. The catalogue is being sent free to firms in the city, and to individuals likely to benefit by having such a list near at hand.

From Week to Week

EXTENSIVE DAMAGE WAS CAUSED by fire at Vickers' Works, Dartford, on Friday night, September 25. The paint department was involved.

THE PRIME MINISTER, at his own request, is to visit the Dalmarnock plant for the production of smokeless fuel. The scheme for purifying the atmosphere is a municipal enterprise.

DR. G. C. CLAYTON, M.P., and Professor H. C. Harold Carpenter (Professor of Metallurgy at Victoria University, Manchester, until 1913) have been appointed members of the Advisory Council to the Committee of the Privy Council for Scientific and Industrial Research.

THE PRESIDENTIAL ADDRESS before the Refractories Section of the Ceramic Society was delivered by Mr. Frank West, not by Mr. J. H. West as reported last week. Mr. Frank West is a director of West's Gas Improvement Co., Ltd., and managind director of the Derbyshire Silica Fire Brick Co., Ltd., of Hartington, near Buxton.

THE MARRIAGE took place on Saturday, September 26, at Brompton Oratory, of Dr. J. F. Crowley, D.Sc., of Queen Anne's Gate, Westminster, late parliamentary candidate for Warrington, and Mary Elizabeth Schiller, of Stafford. The honeymoon is being spent on the Continent, and a reception will be held in London early in November.

THE REDUCTION OF CHEMICAL WORKERS' WAGES was discussed at Manchester on Monday at a meeting of the Chemical Trade Joint Industrial Council. The suggestion had been brought forward through the Chemical Employers' Federation giving notice to the Council to terminate the award made in June last year, and to set a date when wages of day men and shift men will be reduced by 5d. per day. It was decided to adjourn until the next meeting of the Joint Council in the middle of October.

MR. JOHN MATHESON MCDONALD, of Lombard Street, London and Farnham, Surrey, a director of the Rio Linto Co., Ltd., left £261,021. Mr. W. P. ROBERTSON, of Kensington, London, a director of the Lautaro Nitrate Co., Ltd., has left estate of the gross value of £36,026, with net personalty £35,805. Mr. JOHN STEPHEN, of Eversley, Southfield, Hessle, a former chairman of the Seed, Oil and Cake Association, and a former director of the British Oil and Cake Mills, left £19,136, with net personalty £15,305.

UNITED WATER SOFTENERS, LTD., have transferred their headquarters organisation from Imperial House, Kingsway, to Aldwych House, London, W.C.2, as from Monday, September 28. The new offices, in addition to extensive departmental accommodation, contain demonstration rooms equipped with a full set of working models, and afford ample facilities for interviews with clients. The works, laboratories, and test houses will remain at Brentford, Middlesex. The new telephone number is Holborn 3111 and the telegraphic address is "Aquadolce, Estrand, London."

NEGOTIATIONS between the German and Japanese dye industries are reported from Berlin. German representatives are to visit Japan shortly, for the purpose of coming to an agreement with the Japanese dye industrialists regarding the sale of German dyes in that country. The negotiations between the two countries for the conclusion of a commercial treaty have hitherto made no progress owing to the failure to come to an understanding on the dyes import question. The German industrialists, being unwilling to erect dye factories in Japan, wish to solve the problem by direct negotiations in Tokio.

RECENT CHEMICAL TENDERS include—Creosoted wood blocks, Burt, Boulton and Haywood, £10 1s. 3d. per 1,000; 20% carbolic acid, Voxsam, Ltd., 1s. 1½d. per gall. net; spirits of salts, Austin's, Ltd., 1s. per gall. net; English white lead, Nicholls and Clarke, £52 15s., less 5 per cent. per ton; carbolic acid, 98 per cent., Burt, Boulton and Haywood, 2s. 4d. per gall. net, all for Bermondsey Council. Percolating filters, etc., for Rotherham Council, F. Smith, Wombwell; two schemes, £1,413, and £12,134 respectively, accepted. Birmingham Guardians have accepted tenders for the supply of soap at the following prices per cwt.—Yellow soap, 37s.; soft soap, 15s.; soft soap, 8s. per firkin (these prices being the same as in the previous contract); and 43s. for carbolic soap, compared with 37s. 6d.

ARMSTRONG COLLEGE ANNOUNCEMENTS include the appointment of Professor H. V. A. Briscoe, D.Sc., as Director of the Chemistry Department, in succession to Professor W. N. Haworth, D.Sc., now Professor of Chemistry in the University of Birmingham. Professor Briscoe has been for several years Professor of Inorganic and Physical Chemistry in Armstrong College. Dr. G. R. Clemo was appointed as Professor of Organic Chemistry. Dr. Clemo was educated at University College, Exeter, and at Queen's College, Oxford, and for several years was assistant to Professor W. H. Perkin, F.R.S., at Oxford, during which time he carried out a considerable amount of research on problems mainly of a dyestuff nature for the British Dyestuffs Corporation. Recently Dr. Clemo has been in charge of the research department of the British Dyestuffs Corporation at their laboratories at Manchester. He is the author of a number of papers relating to organic chemistry.

CARBON BISULPHIDE, in liquid form, is to be used for the extermination of rats by Stafford Rural Council officials.

NOVEMBER 14 is now stated definitely to be the date on which all stocks of goods containing non-duty artificial silk will be exhausted.

AN ARTIFICIAL SILK FACTORY is to be erected near Berlin by the Accrat Co., which has been founded by the Association of German Tar Factories and the Glaazstoff Fabriken Co.

MR. H. J. YOUNG, F.I.C., chemist and metallurgist to the North-Eastern Marine Engineering Works, is to leave Tyneside at the end of the year to practise as a consulting metallurgist in London.

THE BOARD OF TRADE announces that in future individual licences will be required for the importation of artists' colours and other materials of synthetic organic origin. Applications should be made to the Dyestuffs Advisory Licensing Committee, 53, Spring Gardens, Manchester.

A SERIOUS EXPLOSION occurred in the proofing room of J. Mandleberg and Co., Ltd., waterproof manufacturers, of Pendleton, on Monday. The cause is unknown, but the mixture of benzene and paraffin wax which was being handled resulted in a serious fire. Eight workmen were injured and two have since died.

AT THE FUNERAL on September 24 of the late Lieut.-Colonel J. B. Gaskell, one of the original directors of the United Alkali Co., Ltd. (whose death was reported last week), the United Alkali Company were represented by Dr. G. C. Clayton, M.P., Messrs. W. A. Short, Dr. J. T. Conroy, F. Rawlins, J. E. James (secretary), and Captain F. W. Bain (also representing Sir Max Muspratt).

MR. D. MILNE WATSON, governor of the Gas Light and Coke Co., on Thursday formally opened at Radiation House, Grosvenor Place, S.W., the new Central Research Laboratories. These laboratories, which have been fully equipped with the most modern apparatus for scientific investigations bearing on the gas-heating industry, will bring the collective research of radiation firms under one readily accessible head.

THE QUESTION OF TAR CONTRACTS arose when a letter from the Association of Tar Distillers was read on Wednesday at a meeting of the Hull Corporation Works Committee, asking the Corporation, when entering into a contract, to undertake to buy at least a minimum quantity from the contractor, and during the period of the contract not to buy from any other firm. It was stated by the City Engineer that there had been cases, he believed, where after a contract had been entered into for tar at 6d. a gallon the market price dropped to 5d. When a contract was made it was always better to have a rising and falling prices clause. He recollected a case some twelve months ago in which a tender was accepted for 140,000 gallons of tar at 10d. In two months the price had fallen to 8d. per gallon.

A MEETING OF THE CREDITORS of Donkin, Kenyon and Co., Ltd., Ward Street Dye Works, Blackburn, was held recently at Manchester. A statement of affairs disclosed liabilities of £5,325 15s. 9d., of which £1,733 11s. was due to the trade and there were loan creditors for £2,361. A balance of £1,231 4s. 9d. ranked as unsecured. The net assets were stated to be £2,748 14s. 6d., or an estimated deficiency as regarded the creditors of £2,577 1s. 3d. The failure of the company was attributed to bad trade, and the small amount of business done in this particular class of goods for which the machinery had been made. It was decided to confirm the voluntary liquidation of the company, with Mr. W. H. Marsden, of 43, Preston New Road, Blackburn, as liquidator.

AT THE ANNUAL GENERAL MEETING of the London and District Section of the Institution of the Rubber Industry, on Monday, Mr. D. A. S. Porteous (Johnson and Phillips, Ltd.) was elected chairman, and Mr. S. C. Mote (India Rubber, Gutta Percha, and Telegraph Works Co., Ltd.) was elected vice-chairman. Dr. T. J. Drakeley (head of Department of Chemistry and Rubber Technology, Northern Polytechnic Institute) was re-elected hon. secretary. It was stated by Dr. Drakeley that 180 new individual members had joined the Institution during the previous week. Members of the Section are to pay a visit to the laboratories of the Netherland Government Rubber Institute, at Delft, Holland, at the invitation of Dr. A. van Rossem (director of the Institute). They will leave London on Thursday evening, October 8, and return by Sunday morning, October 11.

Obituary

PROFESSOR E. H. BARTON, D.Sc., F.R.S., Professor of Physics, University College, Nottingham, since 1905, died suddenly while on a tramcar at Nottingham on September 23, aged 67. He had published many original papers and was the author of standard works on physics.

MR. JOHN KITCHEN, of Leeds, aged 83. He began business as a woollen manufacturer. Later, he joined his brother in the firm of William Kitchen and Co., of the Bowman Lane Dyeworks, Leeds, and remained associated with the business until after it was acquired by the Yorkshire Indigo, Scarlet, and Colour Dyers (Ltd.), being one of the original directors of the company, and for some time chairman.

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SUGAR.—The gasification of molasses residue and the recovery of potash, sodium cyanide and ammonium sulphate. Part I. F. Muhlert. *Chem. Apparatur*, August 25, 1925, pp. 156–157.

THALLIUM COMPOUNDS.—Thallium salts of lauric and myristic acids. D. Holde and K. Takehara. *Ber.*, September 16, 1925, pp. 1788–1791.

Alkyl compounds of thallium. E. Krause and A. v. Grosse. *Ber.*, September 16, 1925, pp. 1933–1939.

Patent Literature

Abstracts of Complete Specifications

238,917. Ozone, Production of. J. F. V. Pourbaix, Braemar House, Ealing Road, Alperton, Middlesex. Application date, March 28, 1924.

Ozone is produced by means of an electric discharge between electrodes consisting of a glass container having a central platinum wire and filled with water or other liquid containing silver or other metal in colloidal form.

238,936. Cellulose Acetates, Dyeing of. E. G. Beckett, J. Thomas, and Scottish Dyes, Ltd., Murrell Hill Works, Carlisle. Application date, May 26, 1924.

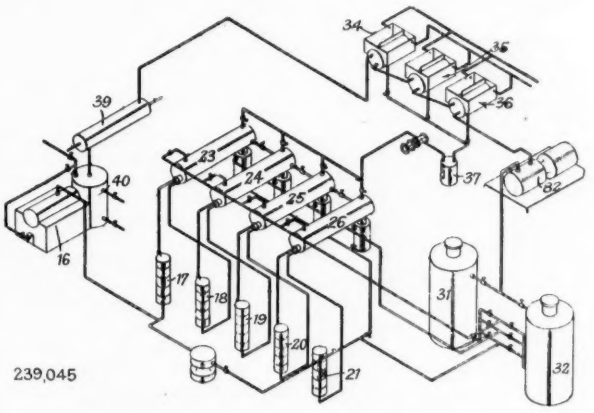
It has been found that cellulose acetate materials may be dyed fast yellow-red shades by means of a small class of anthraquinone derivatives which have little affinity for cotton, and are not usually regarded as dyestuffs. These are derivatives of α-hydroxyanthraquinone (other than amino derivatives) containing at least one other hydroxyl group or a halogen atom in the molecule, but not those poly-hydroxyanthraquinones which contain two hydroxyl groups in the ortho position in regard to one another. The dyes are employed in a fine state of division since they are only slightly soluble in water. Dyestuffs employed include 1 : 5-dihydroxyanthraquinone, 1-hydroxy-4-chloranthraquinone, 1:6-dihydroxyanthraquinone, 1 : 6-dihydroxy-4-chloranthraquinone, 1 : 4-dihydroxyanthraquinone, leuco-1 :4-dihydroxyanthraquinone, 1:4:6-trihydroxyanthraquinone, 1 : 4 : 6-trihydroxy-2-chloranthraquinone.

238,938. Partial Oxidation of Paraffin Hydrocarbons in the Gaseous Phase. E. C. R. Marks, London. From Carbide and Carbon Chemicals Corporation, 30, East 42nd Street, New York. Application date, May 26, 1924.

Hydrocarbons containing more than one carbon atom to the molecule are oxidised in air at a temperature of 620°-850° C. The hydrocarbon is subjected to that temperature for such a time that a result is obtained approximating that obtainable by subjecting each hydrocarbon molecule to a temperature of 700°-710° C. for a little less than one second. It has been found that formaldehyde can be obtained by the partial oxidation of ethane by this process in a concentration 10-20 times as great as that obtainable when using methane. It is also found that a portion of the ethane is converted into ethylene. A mixture of ethane and air is passed through a hot silica tube, and the gas then passed through an ice cooled vessel in which formaldehyde solution is condensed. The residual gas is scrubbed with cold water yielding more formaldehyde and some acetaldehyde. The remaining gas contains no benzene, diolefines, or tar, and its ethylene content may be absorbed in acid without further treatment. It is found preferable to employ air containing an excess of nitrogen in this reaction. Propane, butane, or a higher paraffin may be used instead of ethane with similar results, except that olefines of higher molecular weight are obtained. The process is applicable to coke oven gases.

239,045. Producing Light Hydrocarbons Such as Gasolene by Distillation of Solid Carbonaceous Materials, Process of. M. J. Trumble, 816, Higgin Building, Los Angeles, Cal., U.S.A. Application date, September 2, 1924.

The process is for obtaining gasolene from coal, lignite, shale, and carbonaceous residues of oil refining processes. The retorts 31, 32 are charged with the carbonaceous material, and steam generated in the boiler 16 is passed in succession through superheater 17, still 23, superheater 18, still 24, superheater 19, still 25, superheater 20, and still 26. The stills are kept partly full of condensate which is vaporised by the steam. The steam then passes through a superheater 21, and then into retorts 31, 32, through which it passes upwards to distil the material. The vapours from the stills 23, 24, 25, 26 are also passed through retort 31 or 32 before the superheated steam to preheat the charge. The vapour from the retorts may be passed into a prime mover 82 where its heat and pressure are utilised. The stills and retorts are preferably kept at 200 lb. per square inch. The gases leave the prime mover at atmospheric pressure, and pass in succession through dephlegmators 36, 35, 34, and the condensate is collected in a tank 37. The condensate is a liquid hydrocarbon having a higher boiling point than the desired product, and the latter, together with water vapour, pass on to a condenser 39. The water is removed from the gasolene in a separator 40. Any non-condensible gas remaining is delivered to the boiler furnace, and the heavy condensate in

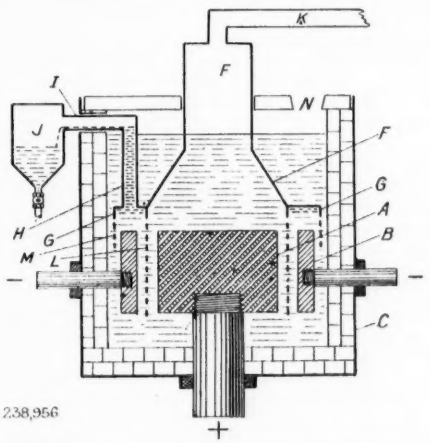


239,045

the tank 37 is forced under pressure into the stills 23, 24, 25, 26. The steam supplied to these stills may be at a temperature above 1,500° F., and is sufficient to crack the condensates. Carbon is deposited in the stills and is prevented from adhering to the heating tubes by continuously moving scrapers and is continuously discharged. It is found that the intimate mixing of the carbon with the liquid in the stills facilitates the cracking action.

238,956. Electrolytic Processes and Apparatus. G. B. Ellis, London. From the Roessler and Hasslacher Co., Ltd., 709, 6th Avenue, New York. Application date, May 28, 1924.

The apparatus is for producing alkali metals and halogens, by electrolysis of fused halides. The cell contains a central anode A, an annular cathode B, and collectors F, G, for the

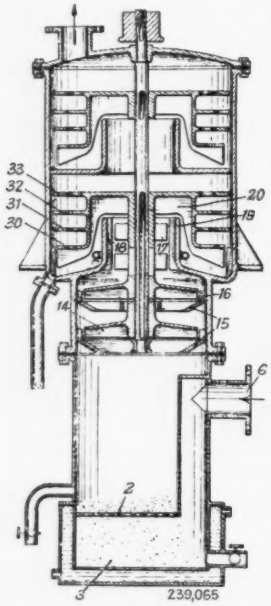


238,956

halogen and alkali metal, *e.g.*, chlorine and sodium. Sodium floats up through a pipe H and then through a pipe I to a vessel J, while chlorine is drawn through a pipe K. The cell is divided into two superposed compartments by the tops of the collectors F, G. Annular diaphragms M, L, are provided. The anode is preferably of graphite or carbon, and the cathode of iron or copper. The salt is introduced through an opening N into the upper compartment, where moisture and gaseous impurities are driven off and solid impurities are retained. The fused salt passes downwards into the electrolysing compartment,

239,065. TAR SEPARATORS. R. W. James, London. From Lignojen Maschinen and Apparatebau G.m.b.H., Hohenstaufenstrasse 50, Berlin, W.30. Application date, October 7, 1924.

This apparatus is particularly suitable for purifying producer gas. The gas is first freed from dust and ashes, and passes through the inlet 6 to the compartment 3 containing a chemical compound for preliminary purification. The gas ascends through a perforated partition 2, and meets a series of rotating vanes 14. These are surrounded by grid members 15 having projections 16, and the gas is thereby caused to undergo sharp changes of direction which cause some of the tar to separate out. The gas then passes through rotary vanes 17 surrounded by inwardly projecting ribs 18. The gas is then deflected by the partition 19 to the lowest of a series of vanes 30, 31, 32, and 33, carried by a bell 20. The vanes are perforated in such a manner that the gas is compelled to follow a sinuous path. Another similar rotating bell 20 is provided in the upper part of the separator. This apparatus effects such a complete purification of the producer gas obtained from substances of comparatively low value and having a high content of tar, such as brown coal, lignite, wood, etc., that the gas may be used in engines, or for illuminating by means of incandescent mantles.



239,105. GAS CLEANING APPARATUS. J. P. Dovel, 1415, North 30th Street, Birmingham, Jefferson Co., Ala., U.S.A. Application date, January 21, 1925.

This apparatus is suitable for purifying blast furnace gas. It consists essentially of a casing with inlet and outlet on opposite sides. A number of shallow troughs are arranged transversely across the bottom, and a continuous flow of water is maintained in these troughs. Transverse baffles project downwards from the roof and terminate just above the water in the troughs, while other baffles project upwards between the troughs. The gas is thus caused to pass between the lower edges of the depending baffles and the surface of the water in the troughs, with a sudden change of direction and high velocity. Solid matter suspended in the gases is thus projected into the water and retained by it.

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention:—211,895 (H. Skappel) relating to a process of splitting up ores and metallurgical products, see Vol. X, p. 39 (Metallurgical Section); 229,619 (A. Goldschmidt and A. Prill) relating to purification of pine tars, see Vol. XII, p. 440; 230,046 (Oxhydrique Française) relating to hydrogen-producing apparatus, see Vol. XII, p. 484; 230,106 (A. A. L. J. Damiens) relating to extraction of carbon monoxide from industrial gases, see Vol. XII, p. 485; 231,468 (Soc. Alsacienne de Produits Chimiques) relating to manufacture of borneols, see Vol. XII, p. 590; 231,810 (L. Lilienfeld) relating to manufacture of cellulose derivatives, see Vol. XII, p. 591.

International Specifications not yet Accepted

237,594. NAPHTHALENE DIAZO-OXIDES; DYES. Akt.-Ges. für Anilin Fabrikation, Treptow, Berlin. International Convention date, July 28, 1924.

6- or 7-oxynaphthalene-1:2-diazo-oxide-4-sulphonic acid is treated with acid anhydrides or acid chlorides to obtain acidyl-oxy-naphthalene-1:2-diazo-oxide-4-sulphonic acids. The diazo-oxides are obtained by treating a 1-amino-2:6- or 2:7-oxy-naphthalene-4-sulphonic acid or a derivative with nitrite in presence of a metal salt. The above sulphonic acids may be coupled with 1-aryl-3-methyl-5-pyrazolones to obtain *o*-oxyazo dyes which give orange to brown shades on wool. *p*-toluene-sulphonic or benzoic ester of 7-oxynaphthalene-1:2-diazo-oxide-4-sulphonic acid, and 1-phenyl-, 1-*p*-nitrophenyl-, or 1-α-naphthyl-3-methyl-5-pyrazolone are specified as components.

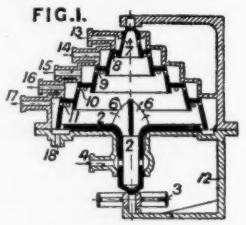
237,615-6. COMPLEX FLUORIDES. A. F. Meyerhofer, 10, Goethestrasse, Zurich, Switzerland. International Convention date, December 20, 1923.

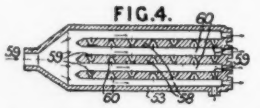
237,615. Complex fluorides, e.g., sodium titanofluoride, other than ordinary double fluorides, silicofluorides, or borofluorides are obtained in this process. In an example magnesium fluoride, sodium chloride, and titanium fluoride are mixed together in presence of very dilute hydrochloric acid.

237,616. Potassium silicofluoride is obtained from potassium fluoride, silica and hydrochloric acid. Sodium borofluoride is obtained from boron fluoride, sodium chloride, and hydrofluoric acid. Heat and/or pressure may be employed in the reaction.

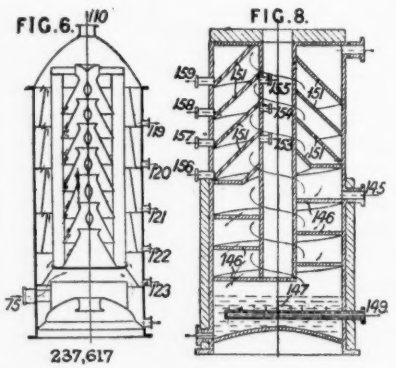
237,617. SEPARATING GASEOUS MIXTURES. S. P. Szezepanowski, Oil-Mine Sezam, Tustanowice, Poland. International Convention date, July 22, 1924.

A mixture of gases and vapours of different densities is separated by passing it through an inlet 4, Fig. 1, into a rotating drum 2, comprising a series of stepped cones. The lightest molecules collect at the axial zone 7 and pass into a surrounding annular conduit, and thence to the outlet 13. Heavier constituents collect in the zones 8...11 and are collected at 14...17. Liquid is discharged at 18. In a modification, Fig. 4, the mixture passes into a chamber 53 with separating partitions 58 having upwardly flared apertures 59 and





downwardly flared apertures 60, through which the heavier and lighter constituents pass respectively. In the column shown in Fig. 6, the mixture flows upwards in an undulating path, and the constituents of various densities are drawn off at 119...123. The various fractions may be condensed by externally cooling the column. In another apparatus, Fig. 8, embodying a still, liquid to be distilled flows downwards over a



helical surface 146 to the space 147 which is heated by heating coils or a furnace. Steam may be injected at 149. The vapour passes over a helical surface 151 in the upper part, and the lighter gases escape at 153..155 and the heavier condensates at 156...159.

237,626. BASE-EXCHANGING SUBSTANCES. Nordiske Natrolith Aktieselskab, 2, Jarmersgade, Copenhagen. International Convention date, July 25, 1924. Addition to 227,631. (See THE CHEMICAL AGE, Vol. XII, p. 183.)

Iron, manganese, calcium, and magnesium are removed from water by means of clay, which is calcined at 500°-700° C., and then boiled for ¼ to 4 hours in a solution containing 1 per cent. sodium oxide or 2 per cent. sodium carbonate. The clay is then washed to remove alkali.

237,867. COMMON SALT. · Naamlooze Vennootschap Matechu Maatschappij Tot Exploitate van Chemische Uitvindingen, 110, Amalia van Solmsstraat, The Hague, Holland. Assignees of M. Kruger, 41, Albrechtstrasse, Halle-on-Saale, Germany, and S. R. Unkel, 110, Amalia van Solmsstraat, The Hague, Holland. International Convention date, Aug. 2, 1924.

Impure salt is admitted through a hopper 3 to an inclined trough 1, and moved by a conveyer 2 through brine in the

FIG.2.

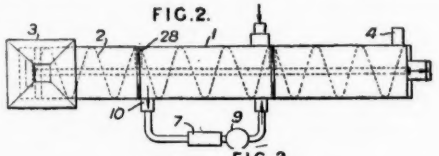


FIG.3.

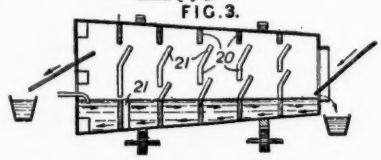
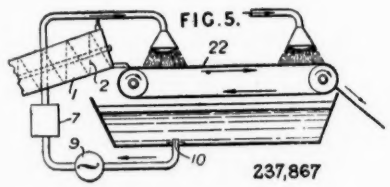


FIG.5.



237,867

first compartment. Beyond a partition 28, the salt is treated with brine which circulates through a filter 7, and in the last compartment with sufficient water to remove magnesium chloride. Alternatively, washing may be effected in a rotary conical drum having parallel guide ribs 20. In another modification, the salt is first treated in an inclined trough 1 and discharged on to a belt 22 where it is sprayed in succession with brine circulated through a pipe 10, and with water.

237,872. DYES. Soc. of Chemical Industry in Basle, Switzerland. International Convention date, August 2, 1924. Addition to 205,525. (See THE CHEMICAL AGE, Vol. IX, p. 580.)

A 1 : 3 : 5-triazine derivative halogenated in the nucleus is condensed with a 4-aminoanthraquinone-4¹-halogen-1 : 2-thioxanthone or -acridone, to yield vat dyes which give violet, blue, brown, green, grey, etc., shades on cotton. The products may be further condensed with other compounds. To obtain the 4-amino-anthraquinone-4¹-chloro-1 : 2-thioxanthones and -acridones, 1-halogen-4-amino- or 1-halogen-4-acidylamino-anthraquinone is condensed with a 2-amino- or 2-mercapto-4-halogenbenzoic acid, followed by ring closure, if necessary after saponifying the acidyl group. In examples, cyanuric chloride is condensed with 4-aminoanthraquinone-4¹-chloro-1 : 2-thioxanthone and the product condensed with aniline; 1 : 5-diaminoanthraquinone is condensed with cyanuric chloride, and the product with 4-aminoanthraquinone-4¹-chloro-1 : 2-thioxanthone and 1-aminoanthraquinone; cyanuric chloride is condensed with 4-aminoanthraquinone-4¹-chloro-1 : 2-acridone. Several other components are also specified.

LATEST NOTIFICATIONS.

240,148. Process for the preparation of pure phosphoric acid starting from natural phosphates. Millberg, C. Sept. 18, 1924.

240,168. Manufacture of a blue dyestuff. Farbwerke vorm. Meister, Lucius, und Brüning. September 20, 1924.

Specifications Accepted with Date of Application

222,137. Synthetic ammonia process. Synthetic Ammonia and Nitrates, Ltd. September 19, 1923.

225,862. Monoazo dyes, Manufacture of. Farbenfabriken vorm. F. Bayer und Co. December 5, 1923.

230,055. Azo dyes, Manufacture and production of. Farbenfabriken vorm. F. Bayer und Co. February 28, 1924.

231,134. Ammonia from gases containing cyanide of hydrogen, process for the production of. Norsk Hydro-Elektrisk Kvaelstofaktieselskab. March 21, 1924.

231,801. New cellulose compounds, Manufacture of. L. Lilienfeld. April 4, 1924.

239,252. Colloidal sulphur, Manufacture of. Burt, Boulton and Haywood, Ltd., F. C. Elphick and J. R. Gray. March 8, 1922.

239,551. Phosphate fertiliser, Manufacture of. L. Adelantado. March 5, 1924.

239,556. Hydrocarbon oils into liquids of lower boiling point, Conversion of. G. F. Forwood and J. G. Taplay. March 15, 1924.

239,557. Reducing ores, Process for. R. E. Ellis (G. R. Gamlen). March 15, 1924.

239,558-9. Lead chloride, Treatment of—and application to treatment of lead ores or the like. S. C. Smith and Chemical and Metallurgical Corporation. March 15, 1924.

239,672. Gas purifiers. R. M. Brooke. August 7, 1924.

239,694. Activated carbon for the sterilisation and purification of water and other fluids. J. N. A. Sauer. September 3, 1924.

239,716. Combustion gases for decarbonising cast iron and other metal castings, Process for the purification of. P. J. Martin and G. F. Bertels. October 3, 1924.

239,720. Metals from their ores, Extraction of. L. Venn-Brown. October 6, 1924.

239,726. New esters of saccharides with unsaturated fatty acids of high molecular weight. W. Carpmael (*Farbenfabriken vorm. F. Bayer und Co.*). October 18, 1924.

239,744. Highly active carbon, Processes of manufacturing—and the products obtained thereby. J. H. Bregeat. December 6, 1924.

239,758. Sodium pentaborate direct from boron ores, Process for the production of. Borax Consolidated Ltd., and A. A. Kelly. December 18, 1924. Addition to 180,110.

239,768. Iron-copper alloys, Process for the treatment of. H. E. Potts. (*Orkla Grube Aktiebolag.*) January 17, 1925.

239,791. Distillation and like columns. C. Still (Firm of), and A. Kuhn. March 24, 1925.

Applications for Patents

Bedford, C. S. Dyeing artificial silk. 23,475. September 21.

Bloxam, A. G., and Chemische Fabrik Griesheim-Elektron. Manufacture of dyestuffs, etc. 23,762, 23,763, 23,764, 23,765, 23,766. September 23.

Bodrero, B. Manufacture of sulphuro-phosphate. 23,647. September 22.

Bone, W. A. Production of activated nitrogen. 23,869. September 24.

Cross, C. F., and Engelstad, A. Manufacture of products comprising lignone derivatives. 23,561. September 21.

Davidson, T. M. Separation of minerals, etc. 23,555. September 21.

Dunlop Rubber Co., Ltd. Treatment of rubber, etc. 24,042. September 26.

Farbwerke vorm. Meister, Lucius, und Brüning. Manufacture of readily-soluble vat preparations from quinone vat dyestuffs for wool. 23,672. September 22. (Germany, September 24, 1924.)

Fréclou, E. M. E. Purification of hard water by base-exchanging bodies. 23,775. September 23. (France, December 19, 1924.)

Ges. für Kohlentechnik. Production of sodium bicarbonate and sal ammoniac. 23,570. September 21. (Germany, December 23, 1924.)

Ges. für Kohlentechnik. Production of sodium bicarbonate and sal ammoniac. 23,571. September 21. (Germany, November 26, 1924.)

Green, R. Manufacture of cellulose xanthate. 23,572. September 21.

Hatfield, H. S. Chemical analysis. 23,801. September 24.

Hussong Dyeing Machine Co., and Johnson, G. W. Apparatus for dyeing raw stock. 23,743. September 23.

Knoll and Co. Production of derivatives of hypothetic imine. 23,752. September 23. (Germany, April 14.)

Liljenroth, F. G. Production of concentrated phosphoric acid. 23,605. September 22.

Mackay, H. S. Electrochemical extraction of copper and zinc from ores. 23,846. September 24.

Schmidt, K. F. Production of tetrazols. 23,526. September 21.

Schmidt, K. F. Production of derivatives of hypothetic imine. 23,752. September 23. (Germany, April 14.)

Skoglund, J. V. Manufacture of sulphuric acid. 23,727. September 23.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

London, October 2, 1925.

THE demand for chemicals is still on the quiet side, but on the whole the general tendency is rather better and an improvement in the uptake is slowly developing. Prices are steady. The export market is very quiet indeed and without feature.

General Chemicals

ACETONE remains in steady demand. Stocks are particularly light. Price unchanged at £75 to £76 per ton.

ACID ACETIC has been a brighter market. Technical £37 to £39 per ton; pure £38 10s. to £40 10s. per ton for the 80% grades.

ACID FORMIC is only in fair demand and price is rather low, 85% technical being quoted at £46 per ton, ex wharf.

ACID LACTIC is unchanged.

ACID OXALIC is quiet but prices are becoming firmer due to the absorption of second-hand stocks. To-day's quotation is 3¾d. per lb.

ALUMINA SULPHATE.—More business has been passing, any change in price seems likely to be upward.

AMMONIUM CHLORIDE is a fair market and prices are firm.

ARSENIC.—The tendency remains in buyers' favour. There is practically no demand and price is a matter of negotiation.

BARIUM CHLORIDE is rather easier and is quoted £8 15s., ex wharf.

EPSOM SALTS.—This article is very firm. A fair business is reported at price £5 to £5 5s. per ton.

FORMALDEHYDE is much firmer, the spot supplies are particularly scarce. Price has advanced to £42 per ton.

LEAD ACETATE is in better demand. Spot supplies are scarce consequent upon difficulties of import. White, £45 10s. per ton; brown, £41 10s. per ton.

LIME ACETATE market is lifeless, nominal price being £15 10s., basis 80%.

LITHOPONE is quietly steady at recent values, but makers are looking for higher prices.

POTASSIUM CAUSTIC AND CARBONATE are unchanged.

POTASSIUM CHLORATE remains short and is quoted 4¼d. per lb.

POTASSIUM PERMANGANATE is weaker, second-hand offers being on the market at 7¾d. per lb.

POTASSIUM PRUSSIATE is rather firmer and commands 7½d. per lb.

SODIUM ACETATE is slow of sale, but price is firm at about £17 10s. per ton.

SODIUM BICHROMATE is a steady market price unchanged.

SODIUM PRUSSIATE is firm and business is passing at 4¾d. per lb. to 4½d. per lb.

SODIUM NITRATE is in steady demand at £22 10s. per ton.

SODIUM SULPHIDE is in poor request and price seems to be weaker.

ZINC SULPHATE is unchanged.

Coal Tar Products

There is very little change to report in the market for coal tar products from last week.

90% BENZOL is slightly weaker, and is quoted at 1s. 8d. per gallon on rails.

PURE BENZOL is steady, at 1s. 11d. to 2s. per gallon on rails.

CREOSOTE OIL is firm at 5¾d. per gallon on rails in the North, while the price in the South is 7d. per gallon.

CRESYLIC ACID is slightly stronger, at 1s. 6½d. per gallon on rails for the pale quality 97/99%, while the dark quality 95/97% can still be obtained at 1s. 1d. per gallon on rails.

SOLVENT NAPHTHA is steady, at 1s. 4½d. to 1s. 5d. per gallon on rails.

HEAVY NAPHTHA is very quiet, and can be bought at 1s. 1d. per gallon on rails.

PITCH.—The market is a little firmer. Prices, 41s. to 42s., f.o.b. London,; 41s. to 41s. 6d., f.o.b. East Coast port.

NAPHTHALENES are unchanged, makers being loath to offer at the low prices ruling for the higher grades, namely, at £5 per ton for 76/78° quality. Business is easily done at £3 to £3 10s. per ton in the lower grades, for home trade.

Latest Oil Prices

LONDON.—LINSEED OIL steady at 2s. 6d. advance. Spot, £40 10s.; September to April, £39 7s. 6d. RAPE OIL quiet. Crude, crushed, £49; technical, refined, £52. COTTON OIL steady. Refined common edible, £48; Egyptian, crude, £42 10s., and deodorised, £50. TURPENTINE quiet and 3d. to 9d. lower. American, spot, 77s. 6d.; October-December, 77s. 6d.; January-April, 79s. 6d. per cwt.

HULL.—LINSEED OIL, spot, £39 15s.; September and October-December, £39 12s. 6d.; and January-April, £39 10s. COTTON OIL, Bombay, crude, £38; Egyptian, crude (new), £41 10s., old £40 10s.; edible refined, £44 5s.; deodorised, £49; and technical, £42 5s. PALM KERNEL OIL.—Crushed, naked, 5½ per cent., £43 5s. GROUND NUT OIL, crushed, extracted, £48; and deodorised, £52. SOYA OIL, extracted, and crushed, £42; and deodorised, £45 10s. RAPE OIL, extracted, £48. CASTOR OIL and COD OIL unaltered.

Nitrogen Products Market

Export.—During the last week the market has continued firm with an upward tendency. British producers are now making sales on the basis of £12 per ton f.o.b. U.K. port in single bags and are quoting higher prices for forward delivery.

Home.—The home demand continues quiet; a good deal of the autumn requirements were purchased during the summer. Prompt sales, except for Ireland, are very small. It is certain that in view of the large sales already made and the good demand for export that the home prices will be raised for December and the later months.

Nitrate of Soda.—The nitrate market continues firm and cargoes are changing hands on the basis of £11 5s. per ton c.i.f. chief European ports. On account of the firmer sulphate position it is anticipated that the nitrate prices will go higher as the season advances.

American Market Movements

(From *Drug and Chemical Markets.*)

INDUSTRIAL chemical prices fairly well maintained. Formic acid advances. Potash carbonate very active and firm. White ammonium chloride firm, grey weak. Potash alum very firm. Trading in fine chemicals showed some improvement over the week, but buying has not increased to such an extent as to affect prices. Benzene and other light oil distillates remain unchanged in price, due to improved industrial demand. Phenol lower. Cresylic acid unchanged. Pyridine quiet. Intermediate demand shows slight improvement. Paranitroaniline firmer. Vegetable oils steady. Linseed, chinawood, perilla, and rapeseed oils firm. Cottonseed oil firm. Animal oils and fats strong. Tallow higher. Fish oils moving in large volume.

Nitrogen Fixation in Norway

IT is reported that negotiations between the Badische Anilin und Sodafabrik and the Norsk Hydro, controlling a hydro-electric plant on the Glommsfjord in Norway, for the joint operation of air nitrogen fixation have not yet been concluded. It is supposed that such an operation would be exploited for creating surplus export reserves of nitrates. It is estimated that Germany's available supplies of fixed nitrogen from Haber-Bosch plants, calcium cyanamide units, and coke and gas plants were 75,000 metric tons more fixed nitrogen in fertiliser, in 1924–25, than were consumed by the soil. This corresponds to 375,000 tons in terms of ammonium sulphate, out of which Germany exported in the calendar year 1924 around 100,000 tons of ammonium sulphate.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

Acid Acetic, 40% Tech.—£20 per ton.

Acid Boric, Commercial.—Crystal, £40 per ton, Powder, £42 per ton.

Acid Hydrochloric.—3s. 9d. to 6s. per carboy d/d, according to purity, strength and locality.

Acid Nitric, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.

Acid Sulphuric.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations: 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

Ammonia Alkali.—£6 15s. per ton f.o.r. Special terms for contracts.

Bleaching Powder.—Spot, £10 10s. d/d; Contract, £9 10s. d/d, 4 ton lots.

Bisulphite of Lime.—£7 10s. per ton, packages extra, returnable.

Borax, Commercial.—Crystal, £25 per ton. Powder, £26 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)

Calcium Chlorate (Solid).—£5 12s. 6d. to £5 17s. 6d. per ton d/d, carriage paid.

Copper Sulphate.—£25 to £25 10s. per ton.

Methylated Spirit 64 O.P.—Industrial, 2s. 5d. to 2s. 11d. per gall. Mineralised, 3s. 8d. to 4s. per gall., in each case according to quantity.

Nickel Sulphate.—£38 per ton d/d.

Nickel Ammonia Sulphate.—£38 per ton d/d.

Potash Caustic.—£30 to £33 per ton.

Potassium Bichromate.—5d. per lb.

Potassium Chlorate.—3¾d. per lb., ex wharf, London, in cwt. kegs.

Salammoniac.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton. Carr. pd.

Salt Cake.—£3 15s. to £4 per ton d/d. In bulk.

Soda Caustic, Solid.—Spot lots delivered, £15 12s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

Soda Crystals.—£5 to £5 5s. per ton ex railway depots or ports.

Sodium Acetate 97/98%.—£21 per ton.

Sodium Bicarbonate.—£10 10s. per ton, carr. paid.

Sodium Bichromate.—4d. per lb.

Sodium Bisulphite Powder 60/62%.—£17 per ton for home market, 1-cwt. iron drums included.

Sodium Chlorate.—3d. per lb.

Sodium Nitrate refined 96%.—£13 5s. to £13 10s. per ton, ex Liverpool.

Sodium Nitrite 100% basis.—£27 per ton d/d.

Sodium Phosphate, £14 per ton, f.o.r. London, casks free.

Sodium Sulphate (Glauber Salts).—£3 12s. 6d. per ton.

Sodium Sulphide conc. solid. 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. pd.

Sodium Sulphide Crystals.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. pd.

Sodium Sulphite, Pea Crystals.—£14 per ton f.o.r. London, 1-cwt. kegs included.

Coal Tar Products

Acid Carbolic Crystals.—4¾d. per lb. Crude 60's, 1s. 3d. to 1s. 4d. Rather more inquiry.

Acid Cresylic 97/99.—1s. 5d. to 1s. 6d. per gall. Steady, with more inquiry. Pale, 95%, 1s. 3d. to 1s. 5d. per gall. Dark, 1s. 3d. to 1s. 6d. per gall.

Anthracene Paste 40%.—3d. per unit per cwt.—Nominal price. No business.

Anthracene Oil, Strained.—8½d. per gall. Good inquiry. Unstrained, 6½d. per gall.

Benzol.—Crude 65's.—11d. to 1s. 3d. per gall., ex works in tank wagons. Standard Motor, 1s. 8d. to 1s. 10d. per gall., ex works in tank wagons. Pure, 2s. to 2s. 1½d. per gall., ex works in tank wagons. Firm.

Toluol.—90%, 1s. 8d. to 1s. 9d. per gall. More inquiry. Pure, 1s. 11d. to 2s. per gall.

Xylol Commercial.—1s. 9½d. to 2s. 3d. per gall. Pure, 3s. 3d. per gall.

Creosote.—Cresylic, 20/24%, 8½d. per gall. Market very quiet. Standard specification, 6½d. to 6¾d. per gall.; middle oil, heavy, 5¾d. to 6d. per gall. Market steady.

Naphtha.—Solvent 90/160, 1s. 4d. to 1s. 6½d. per gall. Fair business. Solvent 90/190, 1s. to 1s. 4d. per gall. Fair demand.

Naphthalene Crude.—Drained Creosote Salts, £3 15s. to £4 per ton. Better inquiry. Whizzed or hot pressed, £5, but no demand.

Naphthalene.—Crystals and Flaked, £10 to £13 per ton, according to districts. Very quiet. Keen continental competition.

Pitch.—Medium soft, 39s. to 42s. per ton, according to district. More inquiry. Market more active.

Pyridine.—90/160, 19s. 6d. to 20s. per gall. Fair demand. Heavy, 11s. to 11s. 6d. per gall. Market quiet.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated.

Acetic Anhydride 95%.—1s. 7d. per lb.

Acid Amidonaphthol disulpho (1-8-2-4).—10s. 9d. per lb.

Acid Anthranilic.—7s. per lb. 100%.

Acid Benzoic.—1s. 9d. per lb.

Acid Gamma.—9s. per lb.

Acid H.—3s. 6d. per lb. 100% basis d/d.

Acid Naphthionic.—2s. 2d. per lb. 100% basis d/d.

Acid Neville and Winther.—4s. 10d. per lb. 100% basis d/d.

Acid Sulphanilic.—9d. per lb. 100% basis d/d.

Aluminium Chloride, anhydrous.—10d. per lb. d/d.

Aniline Oil.—7d. per lb. naked at works.

Aniline Salts.—7d. per lb. naked at works.

Antimony Pentachloride.—1s. per lb. d/d.

Benzaldehyde.—2s. 1½d. per lb. Good home inquiry.

Benzidine Base.—3s. 6d. per lb. 100% basis d/d.

Benzyl Chloride 95%.—1s. 1d. per lb.

p-Chlorphenol.—4s. 3d. per lb. d/d.

p-Chloraniline.—3s. per lb. 100% basis.

o-Cresol 29/31° C.—3d. per lb. Demand quiet.

m-Cresol 98/100%.—2s. 1d. per lb. Demand moderate.

p-Cresol 32/34° C.—2s. 1d. per lb. Demand moderate.

Dichloraniline.—2s. 3d. per lb.

Dichloraniline S. Acid.—2s. 3d. per lb. 100% basis.

Diethylaniline.—4s. 3d. per lb. d/d., packages extra, returnable.

Dimethylaniline.—2s. per lb. d/d. Drums extra.

Dinitrobenzene.—9d. per lb. naked at works.

Dinitrochlorbenzene.—£84 10s. per ton d/d.

Dinitrotoluene.—48/50° C. 8d. to 9d. per lb. naked at works. 66/68° C. 1s. per lb. naked at works.

Diphenylaniline.—2s. 10d. per lb. d/d.

G. Salt.—2s. 2d. per lb. 100% basis d/d.

a-Naphthol.—1s. 10d. per lb. d/d. Fair home inquiry.

B-Naphthol.—1s. per lb. d/d. Fair home inquiry.

a-Naphthylamine.—1s. 3d. per lb. d/d. Fair home inquiry.

B-Naphthylamine.—3s. 9d. per lb. d/d. Fair home inquiry.

m-Nitraniline.—3s. 9d. per lb. d/d.

p-Nitraniline.—1s. 11d. per lb. d/d. Fair home inquiry.

Nitrobenzene.—5d. per lb. naked at works. Good home inquiry.

o-Nitrochlorbenzol.—2s. 3d. per lb. 100% basis d/d.

Nitronaphthalene.—10d. per lb. d/d.

p-Nitrophenol.—1s. 9d. per lb. 100% basis d/d.

p-Nitro-*o*-amido-phenol.—4s. 6d. per lb. 100% basis.

m-Phenylene Diamine.—4s. per lb. d/d.

p-Phenylene Diamine.—9s. 9d. per lb. 100% basis d/d.

R. Salt.—2s. 4d. per lb. 100% basis d/d.

Sodium Naphthionate.—2s. 2d. per lb. 100% basis d/d.

o-Toluidine.—8d. per lb. Good home inquiry.

p-Toluidine.—2s. 3d. per lb. naked at works.

m-Toluylene Diamine.—4s. per lb. d/d.

Wood Distillation Products

Acetate of Lime.—Brown £8. Quiet market. Grey, £14 10s. per ton. Liquor, 9d. per gall. 32° Tw.

Acetone.—£73 per ton.

Charcoal.—£7 to £9 per ton, according to grade and locality. Demand fair.

Iron Liquor.—1s. 7d. per gall. 32° Tw. 1s. 2d. per gall, 24° Tw.

Red Liquor.—10d. to 1s. per gall. 15° Tw.

Wood Creosote.—2s. 7d. per gall. Unrefined.

Wood Naphtha, Miscible.—5s. per gall. 60% O.P. Solvent, 4s. 6d. per gall. 40% O.P. Very quiet.

Wood Tar.—£3 15s. to £5 per ton, according to grade.

Brown Sugar of Lead.—£40 per ton.

Rubber Chemicals

Antimony Sulphide.—Golden, 7¼d. to 1s. 5d. per lb., according to quality, Crimson, 1s. 5d. to 1s. 7½d. per lb., according to quality.

Arsenic Sulphide, Yellow.—2s. per lb.

Barytes.—£3 10s. to £6 15s. per ton, according to quality.

Cadmium Sulphide.—4s. 4d. per lb.

Carbon Bisulphide.—£25 to £28 per ton, according to quantity.

Carbon Black.—5½d. per lb., ex wharf.

Carbon Tetrachloride.—£55 to £60 per ton, according to quantity, drums extra.

Chromium Oxide, Green.—1s. 3d. per lb.

Diphenylguanidine, 4s. to 4s. 3d. per lb.

Indiarubber Substitutes, White and Dark.—5¼d. to 6¼d. per lb.

Lamp Black.—£43 per ton, barrels free.

Lead Hyposulphite.—9d. per lb.

Lithopone, 30%.—£22 10s. per ton.

Mineral Rubber "Rubpron."—£13 12s. 6d. per ton f.o.r. London.

Sulphur.—£9 to £11 per ton, according to quality.

Sulphur Chloride.—4d. per lb., carboys extra.
Sulphur Precip. B.P.—£50 to £55 per ton.
Thiocarbamide.—2s. 6d. to 2s. 9d. per lb.
Thiocarbanilide.—2s. 1d. to 2s. 3d. per lb.
Vermilion, Pale or Deep.—5s. per lb.
Zinc Sulphide.—1s. 1d. per lb.

Pharmaceutical and Photographic Chemicals

Acid, Acetic, 80 % B.P.—£39 per ton ex wharf London in glass containers.
Acid, Acetyl Salicylic.—2s. 5d. to 2s. 9d. per lb. Keen competition continuing. Good demand.
Acid, Benzoic B.P.—2s. to 2s. 3d. per lb., according to quantity.
Acid, Boric B.P.—Crystal £46 per ton, Powder £50 per ton. Carriage paid any station in Great Britain.
Acid, Camphoric.—19s. to 21s. per lb.
Acid, Citric.—1s. 4d. per lb. Dearer owing to increased cost of raw material.
Acid, Gallic.—2s. 9d. per lb. for pure crystal, in cwt. lots.
Acid, Pyrogallic, Crystals.—5s. 4d. to 5s. 6d. per lb.
Acid, Salicylic.—1s. 3½d. to 1s. 5d. per lb. Technical.—10½d. to 11d. per lb.
Acid, Tannic B.P.—2s. 8d. per lb.
Acid, Tartaric.—1s. 0½d. per lb. Market firm.
Amidol.—6s. 6d. per lb., d/d.
Acetanilide.—1s. 5d. per lb. for quantities.
Amidopyrin.—13s. 3d. per lb.
Ammonium Benzoate.—3s. 3d. to 3s. 6d. per lb., according to quantity.
Ammonium Carbonate B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks.
Atropine Sulphate.—11s. 6d. per oz. for English make.
Barbitone.—10s. 3d. to 10s. 6d. per lb.
Benzonaphthol.—3s. 6d. per lb. spot.
Bismuth Carbonate.—12s. 9d. to 14s. 9d. per lb.
Bismuth Citrate.—11s. 4d. to 13s. 4d. per lb.
Bismuth Salicylate.—10s. 2d. to 12s. 2d. per lb.
Bismuth Subnitrate.—10s. 9d. to 12s. 9d. per lb. according to quantity.
Borax B.P.—Crystal £29, Powder £30 per ton. Carriage paid any station in Great Britain.
Bromides.—Potassium, 1s. 10d. to 2s. 1d. per lb.; sodium, 2s. to 2s. 3d. per lb.; ammonium, 2s. 4d. to 2s. 7d. per lb., all spot. British or Imported. Firm.
Calcium Lactate.—1s. 3d. to 1s. 6d., according to quantity.
Chloral Hydrate.—3s. 5d. to 3s. 6d. per lb., duty paid.
Chloroform.—2s. 5½d. to 2s. 7½d. per lb., according to quantity.
Creosote Carbonate.—6s. 9d. per lb.
Formaldehyde.—£41 per ton, in barrels ex wharf.
Glycerophosphates.—Fair business passing. Calcium, soluble and citrate free, 7s. per lb.; iron, 8s. 9d. per lb.; magnesium, 9s. per lb.; potassium, 50%, 3s. 6d. per lb.; sodium, 60%, 2s. 6d. per lb.
Guaiacol Carbonate.—6s. to 7s. per lb.
Hexamine.—2s. 3d. powder crystal, 2s. 5d. free running crystal, per lb.
Homatropine Hydrobromide.—30s. per oz.
Hydrastine Hydrochloride.—English make offered at 120s. per oz.
Hydrogen Peroxide (12 vols.).—1s. 8d. per gallon f.o.r. makers' works, naked.
Hydroquinone.—4s. 4½d. per lb., in cwt. lots.
Hypophosphites.—Calcium, 3s. 6d. per lb., for 28 lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.
Iron Ammonium Citrate B.P.—1s. 8d. to 1s. 11d. per lb. Green, 2s. 2d. to 2s. 7d. per lb. U.S.P., 1s. 7d. to 1s. 10d. per lb.
Magnesium Carbonate.—Light Commercial, £34 per ton net. Light pure, £46 per ton.
Magnesium Oxide.—Light Commercial, £70 per ton, less 2½%, price reduced; Heavy Commercial, reduced to £24 per ton, less 2½%; Heavy Pure, 2s. to 2s. 3d. per lb., according to quantity.
Menthol.—A.B.R. recrystallised B.P., 46s. net per lb., October delivery. Synthetic, 22s. 6d. to 27s. 6d. per lb., according to quality. English make.
Mercurials.—Red oxide, 5s. 2d. to 5s. 4d. per lb.; Corrosive sublimate, 3s. 7d. to 3s. 9d. per lb; white precipitate, 4s. 6d. to 4s. 8d. per lb.; Calomel, 3s. 10d. to 4s. per lb. Still quiet.
Methyl Salicylate.—1s. 5d. to 1s. 8d. per lb. Demand increasing, price firmer.
Methyl Sulphonal.—16s. 9d. to 17s. per lb. Demand limited.
Metol.—9s. per lb. British make.
Paraformaldehyde.—1s. 9d. for B.P. quality.
Paraldehyde.—1s. 4½d. per lb., in free bottles and cases.
Phenacetin.—4s. to 4s. 3d. per lb.
Phenazone.—6s. to 6s. 3d. per lb. Spot lower than forward price.
Phenolphthalein.—4s. to 4s. 3d. per lb. Supply exceeds demand.
Potassium Bitartrate 99/100% (Cream of Tartar).—80s. per cwt., less 2½% for ton lots. Market very firm.
Potassium Citrate.—1s. 7d. to 1s. 10d. per lb.
Potassium Ferricyanide.—1s. 9d. per lb. Quiet.
Potassium Iodide.—16s. 8d. to 17s. 5d. per lb., according to quantity. Steady market.
Potassium Metabisulphite.—7½d. per lb., 1-cwt. kegs included, f.o.r. London.
Potassium Permanganate.—B.P. crystals, 7¾d. per lb., spot. Firmer.
Quinine Sulphate.—2s. 3d. to 2s. 4d. per oz., in 100 oz. tins. Steady market.
Resorcin.—3s. 10½d. per lb. In fair quantities.
Saccharin.—63s. per lb. in 50 lb. lots.
Salol.—3s. 3d. to 3s. 6d. per lb.
Silver Proteinate.—12s. per lb. for satisfactory product light in colour.
Sodium Benzoate, B.P.—1s. 10d. to 2s. 2d. per lb.
Sodium Citrate, B.P.C., 1911.—1s. 4d. to 1s. 7d. per lb., B.P.C., 1923. 1s. 7d. to 1s. 8d. per lb., according to quantity. U.S.P., 1s. 7d. to 1s. 10d. per lb.
Sodium Hyposulphite, Photographic.—£14 to £15 per ton, according to quantity, d/d consignee's station in 1-cwt. kegs.
Sodium Metabisulphite Crystals.—37s. 6d. to 60s. per cwt., net cash, according to quantity.
Sodium Nitroprusside.—16s. per lb.
Sodium Potassium Tartrate (Rochelle Salt).—75s. per cwt., for ton lots and upwards.
Sodium Salicylate.—Powder, 1s. 10¾d. to 2s. 2d. per lb. Crystal, 1s. 11d. to 2s. 1d. per lb. Flake, 2s. 1d. to 2s. 4d. per lb. Prices cut fine: keen competition.
Sodium Sulphide, pure recrystallised.—10d. to 1s. 2d. per lb.
Sodium Sulphite, anhydrous, £27 10s. to £28 10s. per ton, according to quantity; 1-cwt. kegs included.
Sulphonal.—12s. 3d. to 12s. 6d. per lb. Limited demand.
Thymol.—9s. 6d. to 12s. 6d. per lb.

Perfumery Chemicals

Acetophenone.—9s. per lb.
Aubepine (ex Anethol).—10s. per lb.
Amyl Acetate.—3s. per lb.
Amyl Butyrate.—6s. 6d. per lb.
Amyl Salicylate.—3s. 1½d. per lb.
Anethol (M.P. 21/22° C.).—5s. 9d. per lb.
Benzyl Acetate from Chlorine-free Benzyl Alcohol.—2s. 4d. per lb.
Benzyl Alcohol free from Chlorine.—2s. 4d. per lb.
Benzaldehyde free from Chlorine.—2s. 9d. per lb.
Benzyl Benzoate.—2s. 9d. per lb.
Cinnamic Aldehyde Natural.—15s. 6d. per lb.
Coumarin.—13s. per lb.
Citronellol.—19s. per lb.
Citral.—10s. per lb.
Ethyl Cinnamate.—9s. per lb.
Ethyl Phthalate.—3s. per lb.
Eugenol.—9s. 6d. per lb.
Geraniol (Palmarosa).—27s. per lb.
Geraniol.—8s. to 16s. per lb.
Heliotropine.—6s. 3d. per lb.
Iso Eugenol.—14s. 6d. per lb.
Linalol ex Bois de Rose.—22s. per lb.
Linalyl Acetate.—20s. per lb.
Methyl Anthranilate.—9s. 3d. per lb.
Methyl Benzoate.—5s. per lb.
Musk Ketone.—30s. per lb.
Musk Xylol.—7s. per lb.
Nerolin.—4s. per lb.
Phenyl Ethyl Acetate.—14s. per lb.
Phenyl Ethyl Alcohol.—12s. per lb.
Rhodinol.—36s. 6d. per lb.
Safrol.—1s. 8d. per lb.
Terpineol.—1s. 8d. per lb.
Vanillin.—23s. 9d. per lb.

Essential Oils

Almond Oil.—12s. 6d. per lb.
Anise Oil.—3s. 6d. per lb.
Bergamot Oil.—27s. 6d. per lb.
Bourbon Geranium Oil.—16s. per lb.
Camphor Oil.—6os. per cwt.
Cananga Oil, Java.—11s. 3d. per lb.
Cinnamon Oil, Leaf.—5d. per oz.
Cassia Oil, 80/85%.—9s. 9d. per lb.
Citronella Oil.—Java, 85/90%, 3s. 7d.; Ceylon, 2s. 3d. per lb.
Clove Oil.—7s. 6d. per lb.
Eucalyptus Oil, 70/75%.—1s. 10d. per lb.
Lavender Oil.—French 38/40% Esters, 27s. 6d. per lb.
Lemon Oil.—6s. 9d. per lb. 7s. asked for forward shipment.
Lemongrass Oil.—4s. 9d. per lb.
Orange Oil, Sweet.—10s. 9d. per lb.
Otto of Rose Oil.—Bulgarian, 60s. per oz. Anatolian, 35s. per oz.
Palma Rosa Oil.—13s. 9d. per lb.
Palma Rose Oil.—15s. 3d. per lb.
Peppermint Oil.—Wayne County. No good quality material available. Japanese, 26s. per lb. Much firmer.
Petitgrain Oil.—9d. per lb.
Sandal Wood Oil.—Mysore, 26s. per lb. Australian, 18s. 6d. per lb

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.

Glasgow, October 2, 1925.

THERE has been a slight slackness in Home business in the heavy chemical market, possibly due to some extent to local holidays, but export inquiries have been fairly numerous, with the proportion of orders good. Prices remain steady.

Industrial Chemicals

ACID ACETIC.—In moderate request and price unchanged. 98/100%, £56 to £67 per ton, according to quality and packing, c.i.f. U.K. ports. 80% Pure, £40 to £42 per ton. 80% Technical, £39 to £41 per ton, packed in casks, c.i.f. U.K. ports.

ACID BORIC.—Crystal, granulated or small flaked, £40 per ton. Powdered, £42 per ton, packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—In moderate demand. Now quoted 4¾d. per lb. delivered or f.o.b. U.K. ports.

ACID CITRIC B.P. CRYSTALS.—Unchanged at about 1s. 3¼d. per lb., less 5%, ex store. Offered for prompt shipment at 1s. 3d. per lb., ex wharf.

ACID FORMIC 85%.—Rather cheaper quotations from the continent. Now quoted about £46 10s. per ton, ex wharf.

ACID HYDROCHLORIC.—In little demand. Price 6s. 6d. per carboy, ex works.

ACID NITRIC 80°.—Remains unchanged at £23 5s. per ton, ex station, full truck loads. Dearsenicated quality 20s. per ton more.

ACID OXALIC 98/100%.—Quoted 3½d. per lb., ex store, spot delivery. Offered from the continent at a fraction less.

ACID SULPHURIC.—144°, £3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—In moderate demand and price unchanged at about 11¾d. per lb., less 5%, ex store. Offered for forward delivery at 11¼d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE, 17/18% IRON FREE.—Quoted £6 15s. per ton, ex store, spot delivery. Offered for prompt shipment from the continent at £6 5s. per ton, c.i.f., U.K. ports.

ALUM, LUMP POTASH.—Spot material unchanged at £9 5s. per ton, ex store. Offered for early shipment from the continent at about £8 per ton c.i.f. U.K. ports.

AMMONIA ANHYDROUS.—Moderate demand and price unchanged at 1s. 4½d. per lb., less 5%, ex station. Containers extra and returnable.

AMMONIA CARBONATE.—Lump, £37 per ton; powdered, £39 per ton; packed in 5 cwt. casks delivered U.K. ports.

AMMONIA LIQUID 880°.—In usual steady demand and price unchanged at 2½d. to 3d. per lb. delivered according to quantity.

AMMONIA MURIATE.—Grey galvaniser's crystals quoted £28 per ton, ex station for English material. Offered from the continent at about £23 10s. per ton c.i.f. U.K. ports. Fine white crystals offered from the continent at £19 5s. per ton c.i.f. U.K. ports.

ARSENIC, REFINED WHITE CORNISH.—Practically no demand and price nominally £23 per ton, ex store.

BARIUM CHLORIDE.—Large crystals quoted £9 10s. per ton, ex store. On offer at £8 5s. per ton c.i.f. U.K. ports to come forward. Fine white crystals quoted about £7 5s. per ton c.i.f. U.K. ports.

BLEACHING POWDER.—Spot lots English material, £10 10s. per ton, ex station. Contracts, 20s. per ton less. On offer from the continent at about £8 7s. 6d. per ton c.i.f. U.K. ports.

BARYTES.—English material unchanged at £5 5s. per ton, ex works. Continental quoted £5 per ton c.i.f. U.K. ports.

BORAX.—Granulated, £24 10s. per ton. Crystals, £25 per ton. Powdered, £26 per ton. Carriage paid U.K. stations, minimum ton lots.

CALCIUM CHLORIDE.—English manufacturer's prices unchanged at £5 12s. 6d. to £5 17s. 6d. per ton, carriage paid U.K. stations. Continental on offer at about £3 17s. 6d. per ton c.i.f. U.K. ports.

COPPERAS, GREEN.—In good demand for export. Prices unchanged at about £3 7s. 6d. per ton f.o.b. U.K. ports, packed in casks.

COPPER SULPHATE.—Spot material available at about £23 10s. per ton, ex wharf. English for export quoted £24 10s. per ton, f.o.b. U.K. ports.

FORMALDEHYDE 40%.—Now on offer from the continent at about £39 10s. per ton c.i.f. U.K. ports. Spot material available at about £39 15s. per ton, ex store.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continent quoted £2 17s. 6d. per ton c.i.f. U.K. ports.

LEAD, RED.—Imported material quoted £45 per ton, ex store. On offer from the Continent at about £43 5s. per ton, c.i.f. U.K. ports.

LEAD, WHITE.—Unchanged at about £45 per ton, ex store, spot delivery.

LEAD ACETATE.—White crystals, spot material quoted £45 per ton, ex store. Brown, about £43 per ton, ex store. White crystals on offer from the continent at £43 15s. per ton, c.i.f. U.K. ports. Brown, about £38 10s. per ton, c.i.f. U.K. ports.

MAGNESITE, GROUND CALCINED.—In moderate demand and price unchanged at about £8 15s. per ton, ex station.

POTASH CAUSTIC 88/92%.—Quoted £27 10s. per ton, c.i.f. U.K. ports. Limited quantities of spot material available at about £30 per ton, ex store.

POTASSIUM BICHROMATE.—Prices for home consumption 5d. per lb. delivered.

POTASSIUM CARBONATE.—Offered for prompt shipment from the continent at £26 per ton, c.i.f. U.K. ports. Spot material quoted £27 per ton, ex store.

POTASSIUM CHLORATE 98/100%.—A few tons available on the continent at about £32 per ton, c.i.f. U.K. ports.

POTASSIUM NITRATE, SALTPETRE 99%.—Refined granulated quoted at about £24 10s. per ton, c.i.f. U.K. ports. Spot material quoted £27 per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Spot material quoted 8d. per lb., ex store. Offered for early delivery at 7¾d. per lb., ex wharf.

POTASSIUM PRUSSIATE, YELLOW.—Offered from the continent at 7¼d. per lb., ex wharf. Spot material quoted 7½d. per lb. ex store.

SODA CAUSTIC.—76/77%, £18 per ton; 70/72, £16 12s. 6d. per ton; broken 60%, £17 2s. 6d. per ton; powdered 98/99%, £21 7s. 6d. per ton. All carriage paid U.K. stations, spot delivery. Contracts 20s. per ton less.

SODIUM ACETATE.—Quoted £18 15s. per ton, ex store. Spot delivery. On offer from the continent at about £17 15s. per ton, c.i.f. U.K. ports.

SODIUM BICARBONATE.—Refined recrystallised quality, £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

SODIUM CARBONATE, SODA CRYSTALS.—£5 to £5 5s. per ton, ex quay or station. Powdered or pea quality, £1 7s. 6d. per ton more. Alkali 58%, £8 12s. 3d. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture unchanged at £9 10s. per ton, ex station, minimum ton lots. Fine crystals, commercial quality, quoted £8 10s. per ton, ex station. Pea crystals, £14 per ton, ex station. Continental commercial quality quoted £9 5s. per ton, ex store.

SODIUM NITRATE.—Quoted £13 per ton, ex store; 96/98% refined quality, 7s. 6d. per ton, extra.

SODIUM NITRITE 100%.—Quoted £24 per ton, ex store. Offered from the continent about £22 5s. per ton, c.i.f. U.K. ports.

SODIUM PRUSSIATE, YELLOW.—Spot lots quoted at 4d. per lb., ex store. Continental material quoted ex wharf at about the same figure.

SODIUM SULPHATE, SALTCAKE.—Price for home consumption, £3 10s. per ton, f.o.r. works. Good inquiry for export and higher prices obtainable.

SODIUM SULPHIDE.—English material. Solid, 60/62%, now £13 per ton. Broken, £14 per ton. Flake, £15 per ton. Crystals, £8 10s. per ton. Carriage paid U.K. stations, minimum 4 ton lots with slight reductions for contracts to the end of the year. 60/62% solid offered from the continent at £10 15s. per ton, c.i.f. U.K. ports. Broken, £1 per ton more. 30/32% crystals, £7 15s. per ton, c.i.f. U.K. ports.

SULPHUR.—Flowers, £10 10s.; roll, £9 10s.; rock, £9 7s. 6d.; ground, £9 10s. per ton, ex store, spot delivery. Prices nominal.

ZINC CHLORIDE, 98/100%.—Quoted from the continent at £24 5s. per ton, c.i.f. U.K. ports; 97/98% of English manufacture at £25 per ton, f.o.b. U.K. ports.

ZINC SULPHATE.—Fine white crystals quoted £12 10s. per ton, c.i.f. U.K. ports.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Coal Tar Intermediates and Wood Distillation Products

BETA NAPHTHYLAMINE.—3s. 11d. per lb. Small home inquiries.

META XYLIDINE ACETATE.—3s. per lb. Some home inquiries.

ALPHA NAPHTHYLAMINE.—1s. 3d. per lb. Fair home inquiries.

TOLUIDINE MIXED.—1s. 4d. per lb. Fair home inquiries.

GAMMA ACID.—9s. per lb. per 100%. Small home inquiries.

AMIDO NAPHTHOL DISULPHO ACID 1.8.2.4.—10s. 9d. per lb. per 100%. Small home inquiries.

METANITRANILINE.—3s. 9d. per lb. Small home inquiries.

Manchester Chemical Market

[From Our Own Correspondent.]

Manchester, October 1st, 1925.

Buyers of textile chemicals are not operating with much greater freedom, notwithstanding that the holidays have been pretty well finished with. Taking the chemical market generally, however, a moderate amount of business is being done, some sellers reporting a slight improvement in conditions compared with the last few weeks. Whilst most of the transactions are for prompt or early delivery, some forward buying in the principal lines of "heavies" has been done during the week. Here and there values have given way a little since last report, but this applies only to a few sections, the market on the whole keeping up fairly well.

Heavy Chemicals

Phosphate of soda is in quiet demand, with prices maintained at £12 5s. to £12 10s. per ton. A fair business is being done in soda crystals, and quotation is well held at £5 5s. per ton. Hyposulphite of soda, photographic crystals, meets with a moderate demand at £14 10s. to £15 per ton, the commercial quality being quiet, but unchanged from last week at about £9. Chlorate of soda is quoted at 2¾d. to 2¾d. per lb., demand for this material being on a fair scale. Saltcake is attracting little attention, and values are easy at £3 10s. to £3 12s. 6d. per ton. The same may be said of glauber salts, which are on offer at £3 10s. per ton. Prussiate of soda is firm, and in moderate request at round 4d. per lb. Bicarbonate of soda is quiet, but values still range round £10 10s. per ton. Sodium sulphide is quoted at about £9 5s. per ton for commercial quality and £12 per ton for 60-65 per cent. concentrated solid; demand, however, is rather slow. Caustic soda continues to attract a fair amount of attention at from £15 12s. 6d. per ton for 60 per cent. strength, to £18 for 76-77 per cent. Acetate of soda is offering at £18 per ton without meeting with much inquiry. Alkali is selling fairly well at round £6 15s. per ton.

Among potash compounds caustic is in quiet demand, with values on the easy side at £28 to £29 per ton. Carbonate of potash is unchanged from last week at round £25 per ton for 96-98 per cent. quality, with sales on a moderate scale. Bichromate of potash is rather quiet, but prices are steady at 5d. per lb. Prices of permanganate of potash are held at last week's level, but business is inactive; B.P. quality is on offer at 7¾d. to 8d. per lb., and commercial at round 6d. Chlorate of potash meets with a fair amount of inquiry at 4d. per lb. Yellow prussiate of potash is still quoted at about 7¼d. per lb.

The demand for arsenic is still very restricted, and prices are anything but steady, white powdered, Cornish makes, offering at round £18 per ton on rails and £22 to £23 per ton in Manchester. Sulphate of copper is steady, though in limited request, at £24 10s. per ton. Acetate of lime is quiet, but maintained at £14 to £14 10s. per ton for grey material and £7 10s. for brown. Acetate of lead is firm at £45 for white and £40 to £41 for brown, but business is relatively slow. Nitrate of lead continues to be offered at £41 per ton. Epsom salts are quiet, but steady, at £3 15s. per ton, with magnesium sulphate, pharmaceutical quality, on offer at £5 5s. per ton.

Acids and Coal Tar Products

Oxalic acid is a weak section, and not much buying interest is being shown; current values range from 3½d. to 3¾d. per lb. Citric acid is quiet, at about 1s. 3d. per lb. Tartaric acid is fairly steady at 11½d. to 11¾d. per lb., but business is inactive. Acetic acid meets with a moderate amount of inquiry at £37 to £38 for 80 per cent., commercial quality, and round £66 for glacial.

Pitch is quoted at 39s. to 40s. per ton, and a little more activity is reported. Solvent naphtha is steady, and in fair request at 1s. 5½d. to 1s. 6d. per gallon. Carbolic acid is a slow seller at 4½d. to 4¾d. per lb. for crystal and 1s. 4d. per gallon for crude. Naphthalene is moderately active at £12 10s. per ton for refined and from £3 15s. for crude. Creosote oil is steady at 5¾d. per gallon.

The Finuish Chemical Market

As the woodworking industries in Finland require considerable quantities of staple chemicals, it will perhaps interest our readers to give an idea of the market there at present. The following report is based on first-hand information collected in Finland :—

Salt Cake.—The competition between British and German suppliers is very keen, resulting in falling quotations. Present prices are 63s.-65s. per ton, c.i.f., for min. 95 per cent. article.

Sulphur.—The prices are very stable—*i.e.*, $22.50 per ton, c.i.f. Finnish port. Italian exporters quote the same price.

Bleaching Powder.—Prices are stabilising for German, British and Italian makes. Recent c.i.f. quotations have been £7 15s. and £8 10s., c.i.f. Finnish port.

China Clay.—Chiefly British material has been imported, as the German and Danish exporters have had difficulties with the exchange.

Talc.—The market is very firm and prices show a rising tendency. Mostly Norwegian talc has been imported. Prices have fluctuated between 72 and 98 Norwegian kroner per ton, c.i.f., including sacks.

Rosin.—The market is very unsteady, with soaring prices. For American rosin the quotation is now $140, c.i.f It should be mentioned that German exporters are frequently making cheaper offers for American stuff, obviously because they have stocks obtained at lower prices. "Woodrosin" has found an increasing consumption. The quotations for "Hercules," "Newport," and "Acme" are about $100 per ton, c.i.f.

Sulphate of Alumina is chiefly imported from Germany and Sweden; small quantities also from England and France. The German quotations are £4 10s. and £5 per ton, c.i.f., for 14-15 per cent. in slabs, and £5 10s. to £5 15s. for 17-18 per cent., c.i.f. Giulini's gar, 18 per cent., is fetching £5 15s. per ton, c.i.f. The Swedish article, Reymersholm's make, with max. 0·25 per cent. iron, fetches 6·75 to 8·75 Swedish kroner per 100 kilos., c.i.f. Finnish ports.

Caustic Soda.—Prices are firm. The bulk is bought in England and Belgium, but recently Russia has also come into the market. Quotations fluctuate between £13 10s. and £16.

Calcic Soda.—Market very firm at £6 15s. per ton, c.i.f.

Glues.—Foreign "bone" glues fetch about 6·50 Fmk. per kg., c.i.f. Prima Dutch yellow dextrine costs about 28 gulden per 100 kg., c.i.f. Farina, Dutch, superior quality, is showing a rising tendency, prices being £22 to £23 per ton, c.i.f.

Chemical Milling Machinery

The use of milling and mixing machinery is intimately connected with chemical and allied industries, particularly in the manufacture of paints, inks, powders, etc. Torrance and Sons, Ltd., of Bitton, near Bristol, produce a range of machines for these purposes. The "Torrance" Mill, made in various sizes, is used for the grinding and mixing of white lead, zinc whites, oxides, putty, greases, etc., and in the making of oxide and common paints in one operation without subsequent grinding. It can be used for stiff pastes and such substances as china clay, also in dry grinding, blending, and powdering of colours. The "Silent Quadrant" patent triple roller mill is used for fine grinding and can treat materials turned out by the "Torrance" mill. Paint mixers are made, and the "Micro-Twin" differential finishing mill for liquid paints, enamels, and inks gives a fine finish to all products. It will yield from 30 to 50 gallons per hour according to the nature of the paint. It can be altered by micrometer adjustments.

Synthetic Cast Iron

With the purpose of finding a more suitable mill-ball composition, a study of synthetic cast iron is being undertaken by the Bureau of Mines, Department of Commerce, at its Pittsburgh experiment station. In the course of preliminary studies analyses have been made and Brinell hardness numbers have been taken on a number of cast iron and chrome-steel balls collected from different points in the Western States.

Company News

BRITISH PORTLAND CEMENT MANUFACTURERS.—An interim dividend on the ordinary shares of 5 per cent., less tax, is announced, payable on October 14, in respect of the year ending December 31.

EVANS, SONS, LESCHER AND WEBB, LTD.—A scheme providing for the formation of a new company and an assessment on the shares was fully considered and accepted by the various classes of shareholders on September 25.

GLENBOIG UNION FIRE CLAY.—The directors have resolved to recommend, subject to audit, and after providing for depreciation, a dividend at the rate of 20 per cent. per annum, less tax, for the year ended August 31 last. For 1924 the distribution was 15 per cent., less tax.

BELL'S UNITED ASBESTOS CO., LTD.—The directors have declared an interim dividend on the ordinary shares of 6d. per share, being 2½ per cent. (actual), less income tax, on account of the current year. The dividend will be paid on October 19 to shareholders on the register on October 5, and the ordinary share transfer books will be closed from October 5 to October 17, both dates inclusive.

LAWES' CHEMICAL MANURE CO.—The report for the year ended June 30 last, states that the year's working realised a net profit of £3,675. The directors recommend that £1,000 be allocated to provision for doubtful debts, and that the balance of £2,675 be carried forward. The report adds that there has been no material change in prices of fertilisers. There has been greater stability in foreign exchanges. The low level of continental values, however, continues to handicap business. The manufacture of superphosphates is still unprofitable, and the company's output has been limited thereby.

Tariff Changes

POLAND-HUNGARY.—An effect of a Commercial Convention is that British goods will be allowed to enter Hungary at the following reduced rates—(all in gold Korona per 100 kilogs.)—calcium carbide 12, benzine with specific gravity of less than 0·7, 12, gas oil, 4; lubricating oil other than for cylinders, 7; paraffin wax, 15.

GERMANY.—The following alterations in rates are applicable to U.K. products or manufactures as from October 1.

	Gold marks per 100 kilogs.
Potassium chromate, potassium bichromate, chromate and bichromate of soda	3
Arsenic acid, arsenious acid, and arsenic combinations	3
Sodium phosphate (Na_2HPO_4)	1·80
Ammonium phosphate	4
Oxide of zinc	4
White sulphide of zinc (lithopone)	2·50
Thomas phosphate meal	Free
Phosphatic manures treated with acids (superphosphates), even mixed with other materials	Free
Artificial nitro-cellulose silk, not twisted or single twist, not dyed	60
Bone grease, waste grease, etc.	Free
Rapeseed and colza oil	12 (sic)
Linseed oil	2
Castor oil	2
Earthnut oil	12 (sic)
Oleic acid (olein)	3
Dolomite, witherite, strontianite, even calcined	Free
Portland and similar cements	1
Ground lime, not packed	0·30
Packed	1

POLAND.—An order states that the amount of the Customs duty collected on different dyestuffs and chemicals imported from abroad which are used for the manufacture of textile goods exported from Poland will be refunded to the manufacturer. The refund will amount to 1 zloty per 100 kilogrammes in the case of white finished cotton fabrics, 20 zloty per 100 kilogrammes in the case of coloured cotton fabrics, and 38 and 29 zloty per 100 kilogrammes in the case of coloured woollen and half-wollen fabrics respectively.

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us by Mr. H. T. P. Gee, Patent and Trade Mark Agent, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the Registration of the following Trade Marks can be lodged up to October 30, 1925.

"PYROSCO."

460,758. For paints, paint pigments, colours and enamels, (being in the nature of paint) and white lead. Class 1. Pyros Chemical and Engineering Company, Ltd., 68, Victoria Street, London, S.W.1, manufacturers. July 17, 1925.

"GRELASULFON."

460,963. For chemical substances used in manufactures, photography, or philosophical research and anti-corrosives. Class 1. Chemische Fabrik Griesheim-Elektron (a corporation organised under the laws of Germany), 31, Gutleutstrasse, Frankfurt-on-the-Main, Germany, manufacturers. July 27, 1925. (To be associated, Section 24.)

"DEPENDEX."

461,127. For chemical substances used in manufactures, photography or philosophical research and anti-corrosives. Charles C. Williams, Ltd., 64, 66 and 68, Summer Row, Birmingham, oil importers, drysalters, and chemical merchants. August 1, 1925. (To be associated, Section 24.)

"ENOBAR."

461,507. For chemical substances used in manufactures, photography or philosophical research and anti-corrosives, Rabone Bros. and Co., 297, Broad Street, Birmingham, merchants. August 18, 1925. (To be associated, Section 24.)

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

CHEMICALS.—A firm in Calcutta wish to secure agencies in the above. They are understood to have an efficient organisation and could negotiate for representation through their London agents. (Reference No. 342.)

HEAVY CHEMICALS.—A Sydney merchant at present in London desires to get into touch with British manufacturers of heavy chemicals with a view to making agency arrangements. Replies should be addressed to the Official Secretary, Commercial Bureau, Australia House, London, W.C.2. (Reference No. 338.)

PAINTS, ETC.—A commission agent in Havana desires to represent British firms for cement, paints and linseed oil. (Reference No. 396.)

THE Kolonial Etablissement Amsterdam is inviting tenders, by October 7, for wood spirit, zinc white, carbonate of soda, yellow ochre, and minium of lead. Copy of the schedule is available for inspection at the D.O.T. (Inquiry Room).

Canadian Factory Enterprise

THE following factory developments are reported from Canada—The Columbia Gypsum Co., Ltd., have purchased a site and are to erect gypsum manufacturing plant, and the Sherwin-Williams Co., Ltd. are constructing a $250,000 extension to their paint factory. International Clay Products, Ltd., have purchased plant and will undertake the manufacture of china, terra-cotta, etc., from Saskatchewan clays, and the Okanagan Ice and Cold Storage Co. is to erect pre-cooling and cold storage plant at Vernon, British Columbia. The Nootka Sound Canning Co.'s factory for making oil and fish meal from pilchards, is now producing about 4,000 gallons of oil and 24,000 lb. of fish meal daily. Mica mining is developing at Bancroft, N. Hastings, and a cutting factory will be erected shortly.

Petrol Explosion from Electric Spark

A REPORT of interest to all users of petrol and of special importance to oil-supplying or carrying firms was issued on Wednesday by the Home Office. It embodies the results of an inquiry into a fatal explosion in a road tank car, at the works of Shell Mex, Ltd., Shell Haven, Essex, in August, 1924.

The conclusion is that the ignition and subsequent explosion of the spirit vapour in the tank of the car was due to an electric spark arising from the discharge, to the earthed metal of the filling pipe, of a charge of static electricity accumulated on the insulated metal tank of the vehicle, and that this charge of electricity was produced by the flow of the spirit into the tank. "Spirit and other anhydrous liquids flowing through a pipe or nozzle become charged with one kind of electricity, whilst the opposite kind is developed in the pipe or nozzle. The electrical effect is increased if the pipe is made of india-rubber or other non-conducting material; moreover, such material tends to cause an accumulation of the charge upon the pipe instead of conducting it to earth. In this case the charge on the metal filling pipe went to earth, whilst that on the spirit was carried to the tank and accumulated on it because it was insulated from earth by the indiarubber tyres." The report includes suggested precautions.

Lead Poisoning in the Printing Trade

MR. W. C. WARREN, general secretary, National Society of Electrotypers and Stereotypers, speaking recently on the subject of lead poisoning, said that as regards the risks of lead poisoning incidental to the handling of metal in the foundry, he was of the opinion they were not very great where clean metal was concerned. The action of oxygen in the air on the metal itself caused a gas, which was practically lead oxide gas, but that was no serious risk. In the modern system there was always a means of drawing off the gas before it was able to do any serious damage. The greatest risk of all arose from the lead oxide formed in dross. It was formerly the custom to pitch the dross on the floor in a corner of the room, with the result that there was raised a form of fog which made it impossible for the men in that room to avoid inhaling lead oxide. Even worse was the practice adopted in many foundries of re-sweating the dross for the purpose of further extracting the metal left in it. The re-sweated dross had by that time reached the stage when it was commercially pure lead oxide, but sometimes it was again carelessly dumped on the floor, and the workers breathed the fog that arose from this lead oxide into their lungs. Recently much had been done to prevent these undesirable conditions.

German Import Restrictions Withdrawn

AN Order has been published in virtue of which the requirement of import licences is abolished, as from October 1, for all goods imported into Germany with the following chemical exceptions:—Spirits of all kinds. Coal, anthracite, unworked cannel coal, ground or not; lignite, ground or not; peat, peat coal; artificial fuel made from peat; coke (porous residues from the dry distillation of coal or lignite), ground or not; coal and lignite briquettes (also *Nasspressteine*). Lead oxide (gold and silver litharge) in lumps, flakes or powder. Calcium cyanamide (*Kalkstickstaff*). Minium, red lead, Paris red, red lead oxide, "*Saturnzinnober*"; white lead. Morphia, codeine. Aluminium, raw.

Oil Fuel Costs

AN illustrated booklet which sets forth the advantages of oil fueling and oil engines has been published by Blackstone and Co., Ltd., of Stamford. It states a practical case for oil fuel and backs the arguments by actual figures and costs in practice. Tables of specific economies are shown where heavy fuel oil has been substituted for petrol, or paraffin for petrol, and detailed designs and diagrams of plant are included. The firm offers to draw up detailed figures of the cost of oil engine installation in any particular case, and readers availing themselves of this offer, or applying for a copy of this businesslike booklet, should mention THE CHEMICAL AGE.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

Mortgages and Charges

[*NOTE.—The Companies Consolidation Act of* 1908 *provides that every Mortgage or Charge, as described therein, shall be registered within* 21 *days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an* *—*followed by the date of the Summary, but such total may have been reduced.*]

TAYLORS' DRUG CO., LTD., Leeds. (M., 3/10/25.) Registered September 18, £650 mortgage, to Mrs. A. R. Crowther, 6, Street Lane, Roundhay, Leeds, and another; charged on 658, Manchester Road, Bradford; also registered September 18, £3,500 mortgage, to C. H. Munkman, Greek Street Chambers, Leeds, C.A., and another; charged on 18, Victoria Street, and 1, 3 and 5, West St. Mary Gate, Grimsby. *£111,744 0s. 11d. September 12, 1924.

London Gazette, &c.

Company Winding Up Voluntarily

CULINARY OILS, LTD. (C.W.U.V., 3/10/25.) By special resolution, September 3rd, confirmed September 21. M. Belsman, 32, Great St. Helens, London, appointed liquidator.

Partnership Dissolved

A. BRUCE STARKE AND CO. (Augustus Bruce STARKE and Joseph Patrick MADDEN), chemical merchants, 73, Southwark Street, London, S.E., by mutual consent as from June 30, 1925. Debts received or paid by A. B. Starke, who will continue the business at 16, Water Lane, London, E.C.3.

New Companies Registered

JOHN A. BREMNER AND CO., LTD., 72, Lower Thames Street, London, E.C.3. Oil manufacturers and extractors; purifiers, refiners and blenders, manufacturers, importers and exporters of, and dealers in, oils and oleaginous substances of all kinds. Nom. cap. £10,000 in £1 shares.

BRITISH FARMERS CO. (HULL), LTD.—Seed crushers, oil extractors, cake and oil manufacturers, oil refiners, soap boilers, etc. Nom. cap. £10,000 in 1,000 preference and 8,950 ordinary shares of £1 and 1,000 employees' shares of 1s. Solicitors: Newbald, Kay and Son, 6, Blake Street, York.

D. C. KEELING AND CO., LTD. (Particulars as Medley and Son, Ltd.).

LEEDS CITY CHEMICALS, LTD.—Chemists, druggists, drysalters, oil and colourmen, soap manufacturers, etc. Nominal capital, £2,000 in £1 shares. Solicitor: W. Morgan, Cogan Chambers, Bowlalley Lane, Hull.

MEDLEY AND SON, LTD.—Soap makers, perfumers, seed crushers, manufacturers of and dealers in soap, candles, perfumes, artificial tallow, oil, glycerine, chemicals, paints, dyes, colours, varnish, etc. Nominal capital, £100 in £1 shares. Solicitor: W. L. Crawford, Bank Quay, Warrington.

SOUTH AMERICAN TANNING SYNDICATE, LTD.—Tanners, workers and manufacturers of and dealers in hides, skins, leathers, etc. Nominal capital, £12,500 in 10,000 cumulative preference shares of £1 and 50,000 ordinary shares of 1s. Solicitors: Le Brasseur and Oakley, 40, Carey Street, London, W.C.

Firing Ceramic Wares with Oil

THERE is a wide demand for information on the efficiency of oil as a fuel for firing ceramic wares. A complete survey of all ceramic plants known to use fuel oil has been completed by the U.S.A. Bureau of Mines. The results show that oil is an excellent fuel for this purpose, because the fires can be kept clean, there is no trouble from smoke, and the temperature of firing can be closely regulated. All these conditions tend toward efficient burning with a resultant saving in fuel and labour.